Access DB# 127404

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: KIEN NGUYEN Examiner # : 69746 Date: 7/16/04
Art Unit: 3712 Phone Number 308-2493 Serial Number: 10/681 988
Mail Box and Bldg/Room Location: CP2-10B08 Results Format Preferred (circle): [✓ PAPER] DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Horse riding apparatus
Inventors (please provide full names): Seung-Joo Jung

Earliest Priority Filing Date: See filing date in IFW 10-7-2003

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

Please see claims 1-22 and drawings.

****

STAFF USE ONLY		**Type of Search**		**Vendors and cost where applicable**	
Searcher:	Emory Damron	NA Sequence (#)		STN	
Searcher Phone #:	305 8587	AA Sequence (#)		Dialog	x 872.72
Searcher Location:	CP2 2C8	Structure (#)		Questel/Orbit	
Date Searcher Picked Up:	7/19/04 8A	Bibliographic	x	Dr.Link	
Date Completed:	7/19/04 3P	Litigation		Lexis/Nexis	
Searcher Prep & Review Time:	195m	Fulltext	x	Sequence Systems	
Clerical Prep Time:	0	Patent Family		WWW/Internet	x Google/Google
Online Time:	195m	Other		Other (specify)	Catalog

PTO-1590 (8-01)

STIC Search Report
EIC 3700

STIC Database Tracking Number: 127404

TO: Kien Nguyen
Location: cp2 10b08
Art Unit: 3712
Wednesday, July 21, 2004

Case Serial Number: 10/681988

From: Emory Damron
Location: EIC 3700
CP2-2C08
Phone: 305-8587

Emory.Damron@uspto.gov

Search Notes

Dear Kien,

Please find below an inventor search in the bibliographic and full-text foreign patent files, as well as keyword searches in the patent and non-patent literature files, both bibliographic and full text.

References of potential pertinence have been tagged, but please review all the packets in case you like something I didn't.

In addition to searching on Dialog, I also searched Google.com, EPO/JPO/Derwent, and Google Catalogs.

Most of the decent art I found fell out of the patent literature; I think you'll see some elements of the mechanical components described in applicant's claim 1 in each of the cited references.

Please contact me if I can refocus or expand any aspect of this case, and please take a moment to provide any feedback (on the form provided) so EIC 3700 may better serve your needs.

Sincerely,
Emory Damron
Technical Information Specialist
EIC 3700, US Patent & Trademark Office
Phone: (703) 305-8587/ Fax: (703) 306-5915
Emory.damron@uspto.gov

STIC Search Results Feedback Form

EIC 3700

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact*:**

John Sims, EIC 3700 Team Leader
308-4836, CP2-2C08

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* 3712 *Example: 3730*
- *Relevant prior art* ***found****, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

  Types of relevant prior art found:
  - ☐ Foreign Patent(s)
  - ☐ Non-Patent Literature
    (journal articles, conference proceedings, new product announcements etc.)
- *Relevant prior art* ***not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to STIC/EIC3700 CP2 2C08

sira
Search and Information Resources Administration

```
Set     Items   Description
S1       3692   AU=(JUNG S? OR JUNG, S?)
S2          0   SEUNG?(2W)JUNG
S3      20540   HORSE? OR EQUESTRIAN? OR HOBBYHORS? OR EQUIN? OR HIPPOTHER-
             AP? OR HIPPOTHERAP?
S4     300473   IC=(A63B? OR G08B? OR A63G? OR A01K? OR A63H?)
S5         17   S1:S2 AND S3:S4
S6         17   IDPAT (sorted in duplicate/non-duplicate order)
? show files
File 347:JAPIO Nov 1976-2004/Mar(Updated 040708)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200445
         (c) 2004  Thomson Derwent
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6/3,K/6     (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004  Thomson Derwent. All rts. reserv.

014785507     **Image available**
WPI Acc No: 2002-606213/200265
  Play appliance for traveling at slope
Patent Assignee: JUNG S J (JUNG-I)
Inventor:  JUNG S J
Number of Countries: 001  Number of Patents: 001
Patent Family:
Patent No      Kind   Date     Applicat No     Kind   Date      Week
KR 2002022476   A   20020327  KR 200055262     A    20000920  200265  B

Priority Applications (No Type Date): KR 200055262 A 20000920
Patent Details:
Patent No  Kind Lan Pg   Main IPC     Filing Notes
KR 2002022476 A      1 A63B-071/02
Inventor:  JUNG S J
International Patent Class (Main):  A63B-071/02
```

6/3,K/17 **(Item 17 from file: 350)**
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

012416110 **Image available**
WPI Acc No: 1999-222218/199919
XRPX Acc No: N99-165055

Free wheeling clutch bearing used in spinning reel reverse rotation prevention device - has clutch lever enclosed in housing, that has circular slits with which boss provided at upper edge of retaining bar engages

Patent Assignee: SHIN AH SPORTS CO LTD (SHIN-N); CHUNG S J (CHUN-I); SHIN A SPORTS CO LTD (SHIN-N)
Inventor: CHUNG S J; **JUNG S J**
Number of Countries: 003 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 11056180	A	19990302	JP 98158660	A	19980525	199919	B
KR 99009941	A	19990205	KR 9732530	A	19970714	200015	
US 6050512	A	20000418	US 9893696	A	19980609	200026	
KR 330485	B	20020510	KR 9732530	A	19970714	200272	

Priority Applications (No Type Date): KR 9732530 A 19970714
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 11056180	A		6	A01K-089/015	
KR 99009941	A			A01K-089/01	
US 6050512	A			A01K-089/02	
KR 330485	B			A01K-089/01	Previous Publ. patent KR 99009941

...Inventor: **JUNG S J**
International Patent Class (Main): **A01K-089/01** ...

... **A01K-089/015** ...

... **A01K-089/02**

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Set     Items   Description
S1        290   AU=(JUNG S? OR JUNG, S?)
S2          2   SEUNG?(2W)JUNG
S3      53357   HORSE? OR EQUESTRIAN? OR HOBBYHORS? OR EQUIN? OR HIPPOTHER-
             AP? OR HIPPOTHERAP?
S4      37892   IC=(A63B? OR G08B? OR A63G? OR A01K? OR A63H?)
S5          8   S1:S2 AND S3:S4
S6          8   IDPAT (sorted in duplicate/non-duplicate order)
? show files
File 348:EUROPEAN PATENTS 1978-2004/Jul W02
         (c) 2004 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20040715,UT=20040708
         (c) 2004 WIPO/Univentio
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← 0

SIGNIFICANT
HITS
AFTER
REVIEW

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Set     Items   Description
S1       4651   AU=(JUNG S? OR JUNG, S?)
S2          0   SEUNG?(2W)JUNG
S3     257842   HORSE? OR EQUESTRIAN? OR HOBBYHORS? OR EQUIN? OR HIPPOTHER-
             AP? OR HIPPOTHERAP?
S4          7   S1:S2 AND S3
S5          5   RD (unique items)
? show files
File   1:ERIC 1966-2004/Jun 09
         (c) format only 2004 The Dialog Corporation
File   2:INSPEC 1969-2004/Jul W2
         (c) 2004 Institution of Electrical Engineers
File   6:NTIS 1964-2004/Jul W3
         (c) 2004 NTIS, Intl Cpyrght All Rights Res
File   7:Social SciSearch(R) 1972-2004/Jul W2
         (c) 2004 Inst for Sci Info
File   8:Ei Compendex(R) 1970-2004/Jul W2
         (c) 2004 Elsevier Eng. Info. Inc.
File  11:PsycINFO(R) 1887-2004/May W5
         (c) 2004 Amer. Psychological Assn.
File  34:SciSearch(R) Cited Ref Sci 1990-2004/Jul W2
         (c) 2004 Inst for Sci Info
File  35:Dissertation Abs Online 1861-2004/May
         (c) 2004 ProQuest Info&Learning
File  48:SPORTDiscus 1962-2004/Jun
         (c) 2004 Sport Information Resource Centre
File  50:CAB Abstracts 1972-2004/Jun
         (c) 2004 CAB International
File  65:Inside Conferences 1993-2004/Jul W2
         (c) 2004 BLDSC all rts. reserv.
File  94:JICST-EPlus 1985-2004/Jun W4
         (c)2004 Japan Science and Tech Corp(JST)
File  95:TEME-Technology & Management 1989-2004/Jun W1
         (c) 2004 FIZ TECHNIK
File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Jun
         (c) 2004 The HW Wilson Co.
File 111:TGG Natl.Newspaper Index(SM) 1979-2004/Jul 16
         (c) 2004 The Gale Group
File 121:Brit.Education Index 1976-2004/Q2
         (c) 2004 British Education Index
File 142:Social Sciences Abstracts 1983-2004/Jun
         (c) 2004 The HW Wilson Co
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File 437:Education Abstracts 1983-2004/Jun
         (c) 2004 The HW Wilson Co
File 473:FINANCIAL TIMES ABSTRACTS 1998-2001/APR 02
         (c) 2001 THE NEW YORK TIMES
File 474:New York Times Abs 1969-2004/Jul 18
         (c) 2004 The New York Times
File 475:Wall Street Journal Abs 1973-2004/Jul 16
         (c) 2004 The New York Times
File 481:DELPHES Eur Bus 95-2004/Jun W4
         (c) 2004 ACFCI & Chambre CommInd Paris
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 The Gale Group
?
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← 0 SIGNIFICANT HITS AFTER REVIEW

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Set     Items   Description
S1        184   AU=(JUNG S? OR JUNG, S?)
S2         78   SEUNG?(2W)JUNG
S3     896734   HORSE? OR EQUESTRIAN? OR HOBBYHORS? OR EQUIN? OR HIPPOTHER-
              AP? OR HIPPOTHERAP?
S4          3   S1:S2 AND S3
S5          3   RD (unique items)
? show files
File   9:Business & Industry(R) Jul/1994-2004/Jul 16
         (c) 2004  The Gale Group
File  15:ABI/Inform(R) 1971-2004/Jul 16
         (c) 2004 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2004/Jul 19
         (c) 2004 The Gale Group
File  20:Dialog Global Reporter 1997-2004/Jul 19
         (c) 2004 The Dialog Corp.
File  47:Gale Group Magazine DB(TM) 1959-2004/Jul 19
         (c) 2004 The Gale group
File  80:TGG Aerospace/Def.Mkts(R) 1986-2004/Jul 19
         (c) 2004 The Gale Group
File  88:Gale Group Business A.R.T.S. 1976-2004/Jul 16
         (c) 2004 The Gale Group
File 141:Readers Guide 1983-2004/Jun
         (c) 2004 The HW Wilson Co
File 148:Gale Group Trade & Industry DB 1976-2004/Jul 19
         (c)2004 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 436:Humanities Abs Full Text 1984-2004/Jun
         (c) 2004 The HW Wilson Co
File 482:Newsweek 2000-2004/Jul 14
         (c) 2004 Newsweek, Inc.
File 484:Periodical Abs Plustext 1986-2004/Jun W4
         (c) 2004 ProQuest
File 570:Gale Group MARS(R) 1984-2004/Jul 19
         (c) 2004 The Gale Group
File 609:Bridge World Markets 2000-2001/Oct 01
         (c) 2001 Bridge
File 610:Business Wire 1999-2004/Jul 17
         (c) 2004 Business Wire.
File 613:PR Newswire 1999-2004/Jul 17
         (c) 2004 PR Newswire Association Inc
File 621:Gale Group New Prod.Annou.(R) 1985-2004/Jul 19
         (c) 2004 The Gale Group
File 635:Business Dateline(R) 1985-2004/Jul 16
         (c) 2004 ProQuest Info&Learning
File 636:Gale Group Newsletter DB(TM) 1987-2004/Jul 19
         (c) 2004 The Gale Group
File 646:Consumer Reports 1982-2004/Jun
         (c) 2004 Consumer Union
File 649:Gale Group Newswire ASAP(TM) 2004/Jul 15
         (c) 2004 The Gale Group
File 809:Bridge World Markets News 1989-1999/Dec 31
         (c) 1999 Bridge
File 810:Business Wire 1986-1999/Feb 28
         (c) 1999 Business Wire
File 813:PR Newswire 1987-1999/Apr 30
         (c) 1999 PR Newswire Association Inc
```

← Ø SIGNIFICANT HITS AFTER REVIEW

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Set      Items    Description
S1        21803   HORSE? OR EQUESTR? OR EQUINE? OR HOBBYHORS? OR HIPPO()THER-
                 AP? OR HIPPOTHERAP? OR BULL? ?
S2      7850939   SIMULAT? OR IMITAT? OR APPARAT? OR DEVICE? OR MACHIN? OR M-
                 ECHANIC?
S3       566867   TRAIN? OR TEACH? OR TUTOR? OR DRILL? OR LEARN? OR PRACTIC?
                 OR PRACTIS? OR EDUCAT? OR REHEARS? OR INSTRUCT?
S4       310644   SADDLE? OR SEAT? OR SIT OR SITS OR SAT OR SITTING
S5       594914   SLIDE? OR SLIDING OR GLIDE? OR GLIDING?
S6      1159372   ELEVAT? OR LIFT? OR RAIS? OR LEVITAT? OR RISE? OR RISING OR
                  (MOVE? OR MOVING)(2N)(VERTICAL? OR UPWARD?)
S7      1373318   COMPUTER? OR CONTROLLER?
S8      1027844   BUFFER? OR SHOCK()ABSORB? OR SPRING? OR CUSHION?
S9      1019885   LOAD?
S10     1476813   ADJUST? OR FINETUN? OR FINE()(TUNE? OR TUNING?) OR CALIBRA-
                 T? OR TUNE? OR TUNING? OR ATTUNE? OR ATTUNING OR ALIGN? OR AL-
                 INE?
S11     2752099   DRIVE? OR DRIVING OR GEAR? OR MOTOR?
S12     1380289   SENSOR? OR TRANSDUCER? OR DETECTOR? OR DETECTER? OR SENSIN-
                 G()(ELEMENT? OR DEVICE?)
S13      671965   WORM? OR SCREW??? OR CONNECT?(2N)(ROD OR RODS OR LINK? OR -
                 ARM OR ARMS OR SHAFT? OR ASSEMBL?)
S14     2620337   AXIS? OR AXES? OR FRAME? OR BEARING? OR LEVER? OR PIVOT? OR
                  CRANK? OR ROCK??? OR SPEED(2N)REDUC? OR DECELERAT?
S15      295524   IC=(A63B? OR G08B? OR S63G? OR A01K? OR A63H?)
S16         417   S1 AND S2 AND S3
S17         137   S16 AND S15
S18         107   S17 AND S4:S14
S19         107   IDPAT (sorted in duplicate/non-duplicate order)
? show files
File 347:JAPIO Nov 1976-2004/Mar(Updated 040708)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200445
         (c) 2004  Thomson Derwent
?
```

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19/3,K/1      (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004  Thomson Derwent. All rts. reserv.

015458161      **Image available**
WPI Acc No: 2003-520303/200349
XRPX Acc No: N03-413172
   Horse -riding  training   machine , has forceful  springs  connected to
  the base of the upper main body, while corresponding steel axial  shafts
  are  connected  to the base of the lower main body
Patent Assignee: KOBAYASHI S (KOBA-I)
Number of Countries: 001  Number of Patents: 001
Patent Family:
Patent No      Kind   Date     Applicat No    Kind   Date      Week
JP 2003190347   A   20030708  JP 2001402995   A    20011226  200349  B

Priority Applications (No Type Date): JP 2001402995 A 20011226
Patent Details:
Patent No  Kind Lan Pg   Main IPC     Filing Notes
JP 2003190347 A       3 A63B-069/04
   Horse -riding  training   machine , has forceful  springs  connected to
  the base of the upper main body, while corresponding steel axial  shafts
  are  connected  to the base of the lower main body

Abstract (Basic):
...         Forceful  springs  (16) are connected to the base (25) of the
     upper main body (25), while the corresponding steel axial  shafts  (20)
     are  connected  to the base (26) of the lower main body. Return
     springs  (15), linked with corresponding pistons (14), are likewise
     positioned between the bases of the upper...
...         Horse -riding  training  machine .
        ...

...Ensures that posture of rider during actual  horseback  riding is
     effectively corrected...

...The figure shows the internal  elevation  of the  horse  riding type
     training   machine .
        ...

...Return  springs  (15...

...Forceful  springs  (16
Title Terms:  HORSE ;
International Patent Class (Main):  A63B-069/04
```

19/3,K/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

07696467 **Image available**
HORSE -RIDING TYPE **TRAINING** **MACHINE** FOR RECTIFYING PELVIS AND VERTEBRAE AND STRENGTHENING MUSCLES

PUB. NO.: 2003-190347 [JP 2003190347 A]
PUBLISHED: July 08, 2003 (20030708)
INVENTOR(s): HIRAOKA KENJI
KOBAYASHI SETSUKO
APPLICANT(s): KOBAYASHI SETSUKO
APPL. NO.: 2001-402995 [JP 2001402995]
FILED: December 26, 2001 (20011226)

SAmE AS PREVIOUS, DIFFERENT DATABASE.

HORSE -RIDING TYPE **TRAINING** **MACHINE** FOR RECTIFYING PELVIS AND VERTEBRAE AND STRENGTHENING MUSCLES

INTL CLASS: **A63B-069/04**

ABSTRACT

PROBLEM TO BE SOLVED: To provide a **training** **machine** that can more jigglingly in up, down, back, forward, right and left directions and create moderate trotting movement of a **horse** , just as actually riding a living **horse** .

SOLUTION: The main unit of the **training** **machine** is separated in two parts, and a returning **spring** with steel shaft 20/16 is connected to a top base 26 of a main...

...A and a top base 25 of a main unit B. A piston with strong **spring** 15/14 is connected to the top base 25 of the main unit B. A...

...top base 26 of the main unit A and plywood 18 is installed on the **seat** part of the top base 25 of the main unit B. A **driving** **motor** 8, a **decelerator** 9, a shaft 10, a fly wheel with a **gear** 11, a **crank** 12, a con-rod 13, and the piston with a strong **spring** 15/14 are interconnected to each other.

COPYRIGHT: (C)2003,JPO

19/3,K/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts..reserv.

013366470 **Image available**
WPI Acc No: 2000-538409/200049
XRPX Acc No: N00-399011

Simulated training apparatus **for** horse **riding, reciprocates** driver seat **front and back along longitudinal direction of** drive **unit and rotates it partly about lateral and longitudinal directions of** drive **unit**

Patent Assignee: MATSUSHITA ELECTRIC WORKS LTD (MATW)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2000210391	A	20000802	JP 9917734	A	19990126	200049	B

Priority Applications (No Type Date): JP 9917734 A 19990126
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2000210391	A		13	A63B-022/16	

Simulated training apparatus **for** horse **riding, reciprocates** driver seat **front and back along longitudinal direction of** drive **unit and rotates it partly about lateral and longitudinal directions of** drive **unit**

Abstract (Basic):

... **Driver** **seat** (1) is mounted on a support **frame** (2). **Drive** unit (3) to which a **motor** is fixed, is provided on rear side of **driver** **seat** . **Driver** **seat** is reciprocated front and back along longitudinal direction of **drive** unit and rotated partly about lateral and longitudinal directions of **drive** unit.
... For **horse** riding...

...Since the ratio of movement of **driver** **seat** is predetermined by control unit, operation of **training** **apparatus** is easy. **Sensors** provided in **seat** , help in detecting balancing action of **driver** and sends feedback to **drive** control unit to **adjust** the oscillation to desired value...

...The figure shows the block diagram of **driving** **simulating** **apparatus** .
...

... **Driver** **seat** (1...

...Support **frame** (2...
... **Drive** unit (3

Title Terms: **SIMULATE** ;
International Patent Class (Main): A63B-022/16
International Patent Class (Additional): A63B-024/00

19/3,K/15   (Item 15 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

015274456   **Image available**
WPI Acc No: 2003-335387/200332
Related WPI Acc No: 2002-306792
XRPX Acc No: N03-268770

Polo training apparatus **comprises dummy** horse **having body**, pivotally **mounted on rigid** frame **, biased towards central position by** springs **and includes** sensors **to detect pressure from rider's body**

Patent Assignee: GREENWOOD W R (GREE-I)
Inventor: GREENWOOD W R
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
GB 2380140	A	20030402	GB 200015815	A	20000629	200332	B
			GB 200220628	A	20020905		
GB 2380140	B	20040310	GB 200015815	A	20000629	200418	
			GB 200220628	A	20020905		

Priority Applications (No Type Date): GB 200015815 A 20000629; GB 200220628 A 20020905
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
GB 2380140	A		16	A63B-069/04	Div ex application GB 200015815
GB 2380140	B			A63B-069/04	Div ex application GB 200015815

Polo training apparatus **comprises dummy** horse **having body**, pivotally **mounted on rigid** frame **, biased towards central position by** springs **and includes** sensors **to detect pressure from rider's body**

Abstract (Basic):

... The polo **training apparatus** comprises a **simulated** polo pony located on a base within an enclosure defined by two end walls and two side walls all of netting or wire mesh. The dummy **horse** is mounted on a rigid **frame** (40) so that the body portion (44) of the **horse** can be **pivoted** from side to side. and conveyor belts (24) are provided one on each side of, and below, the dummy **horse** .

... Conveyor belts are provided one on each side of, and below, the dummy **horse** on which the ball to be hit can travel. Targets are provided on the front...

...at their center, which is actuated by impact of a ball, generating a signal. The **frame** can move via **motor** under the control of an electronic control unit to **simulate** a galloping **horse** . The **motor** also moves the two conveyors. There are pressure sensitive knee **sensors** and feet **sensors** on either side of the **horses** body which can be activated by the rider and are connected to the **motor** control unit which can vary the speed accordingly. LCD speed display panel indicates the desired...

...For **practicing** polo other than in polo match or on polo pony in a field...

...The **simulated** movement of the **horse** and the movement of the conveyors w.r.t **horse** greatly enhance the realism, and therefore the effectiveness of the **practice** .

...

...Shows a side view, partly cut-away, of a portion of the **apparatus** .

...

...rigid **frame** (40
Title Terms: **TRAINING** ;
International Patent Class (Main): **A63B-069/04**

19/3,K/29 (Item 29 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

014194844 **Image available**
WPI Acc No: 2002-015541/200202
XRPX Acc No: N02-012827
Balance training device **for balance** training , **exercise and recovery of human body, has** motor **which** drives **rotation of** cranks **to enable straight and rotational reciprocating movements of support for** seat
Patent Assignee: MATSUSHITA ELECTRIC WORKS LTD (MATW)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2001286578	A	20011016	JP 2000106514	A	20000407	200202	B

Priority Applications (No Type Date): JP 2000106514 A 20000407
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2001286578	A		8	A63B-023/00	

Balance training device **for balance** training , **exercise and recovery of human body, has** motor **which** drives **rotation of** cranks **to enable straight and rotational reciprocating movements of support for** seat

Abstract (Basic):
... A **motor** (16) is provided to a movable **frame** (8) to **drive** the rotation of the **cranks** (27) connected to a support (3) and a base (4) via the respective rods (30...

...directional straight reciprocating movement and a rotational reciprocating movement on the periphery of a lateral **axis** and a longitudinal **axis** through the rotation of the respective rods.
... A **drive** unit (2) includes the movable **frame** supported to the base via a front and back directional rotating shaft (6). A **seat** (1) is mounted on the support connected to the movable **frame** and the base via the respective links (9,14). The predetermined movement of the support...

...For balance **training** , exercise and recovery of human body. Applicable to riding exercise and balancing on a **horse** .
...

...Enables performing balance **training** using only one source of **drive** .
...

...The figure shows the right longitudinal cross-sectional view of balance **training** **device** . (Drawing includes non-English language text...
... **Seat** (1...

... **Drive** unit (2...

...Movable **frame** (8...

... **Motor** (16...

... **Cranks** (27
...Title Terms: **TRAINING** ;
International Patent Class (Main): A63B-023/00
...International Patent Class (Additional): A63B-069/04

19/3,K/34 **(Item 34 from file: 350)**
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

013416425 **Image available**
WPI Acc No: 2000-588363/200056
XRPX Acc No: N00-435312

Mechanical horse **for** training **, or for use by handicapped people; has plate to** simulate horse **'s back with** drive **shaft to control vertical rods through eccentric to stimulate motion of** horse

Patent Assignee: RUF H (RUFH-I); RUF J (RUFJ-I)
Inventor: RUF H
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 19909613	A1	20000914	DE 1009613	A	19990305	200056	B

Priority Applications (No Type Date): DE 1009613 A 19990305
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 19909613	A1		11	A63B-069/04	

Mechanical horse **for** training **, or for use by handicapped people; has plate to** simulate horse **'s back with** drive **shaft to control vertical rods through eccentric to stimulate motion of** horse

Abstract (Basic):

... The **mechanical** **horse** has a plate (5) that **simulates** a **horse** 's back. A **drive** shaft controls vertical rods (3) through an eccentric, which **drives** alternate **lifts** at the back of the plate, to **simulate** the rump of a moving **horse** . The **drive** shaft has eccentric bushing **bearings** on both sides, which engage the vertical rods, which fit in offset recesses in the **drive** shaft.

... An INDEPENDENT CLAIM is included for a **training** **device** with a guide for reins...

...To **simulate** **horse** riding. For **training** or for use by handicapped people...

...The figure shows a sketch to illustrate the principle of the **device** .
...

...Support **frame** (1
Title Terms: **MECHANICAL** ;
International Patent Class (Main): **A63B-069/04**
...International Patent Class (Additional): **A63B-022/00**

19/3,K/40 (Item 40 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

012362154 **Image available**
WPI Acc No: 1999-168261/199915
XRPX Acc No: N99-122670
Mechanical horse **for use as** horse **riding** trainer
Patent Assignee: RUF-TECH GMBH (RUFT-N)
Inventor: RUF H
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 19737300	A1	19990304	DE 1037300	A	19970827	199915	B

Priority Applications (No Type Date): DE 1037300 A 19970827
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 19737300	A1		10	A63B-069/04	

Mechanical horse **for use as** horse **riding** trainer

Abstract (Basic):

... The **horse** has a **saddled** body (2), which moves in circles normal to the body long **axis** or **lifts** right and left near the body end using a shaft (9) carried in roller **bearings** (35) to engage a bearer part (8), which rests on dampers at both ends and...

... The shafted **drive motor gear** swivels a guide **lever** using a cam. A transmission **lever** swivels a joint engaged by the shaft. The guide **lever** is mounted on the central block (14) of a rod (6) on the undercarriage (5) with the **drive** cam engaging the guide **lever** through a pin. Thus the **motor drives** the cam to swivel the guide **lever** and reciprocate a pin, whose up and down movement is passed through to the bearer...

...body to give the required circular and up and down movements, in a three-dimensional **training** routine...

... **Horse** riding **trainer** , e.g. for all-speed **seat training** .
...

... **Mechanical trainer** closely **simulates horse** at all speeds, i.e. walk, trot and gallop, and is suitable for riding schools...

...The drawing shows a side view of the **mechanical horse** .
...

...roller **bearings** (35
Title Terms: **MECHANICAL** ;
International Patent Class (Main): **A63B-069/04**

```
19/3,K/42     (Item 42 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004  Thomson Derwent. All rts. reserv.

012010799    **Image available**
WPI Acc No: 1998-427709/199836
XRPX Acc No: N98-333817
  Active balance equipment for therapeutic purposes - includes  seat  given
  motions of pitch, yaw and roll by mechanism consisting of angled
  rotatable shafts coupled to  bearing  mountings  driven  by single  motor

Patent Assignee: UNIV BRUNEL (UYBR-N)
Inventor: BURKITT J; CHAPMAN C; SANDBACH D L
Number of Countries: 019  Number of Patents: 001
Patent Family:
Patent No      Kind   Date     Applicat No    Kind   Date     Week
WO 9832501      A1  19980730  WO 98GB195       A   19980122  199836  B

Priority Applications (No Type Date): GB 971279 A 19970122
Patent Details:
Patent No  Kind Lan Pg   Main IPC     Filing Notes
WO 9832501    A1 E  28 A63B-069/04
   Designated States (National): CA US
   Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LU MC
   NL PT SE
...  includes  seat  given motions of pitch, yaw and roll by mechanism
  consisting of angled rotatable shafts coupled to  bearing  mountings
  driven  by single  motor

...Abstract (Basic): The equipment consists of a  seat  (16) coupled to a
    driving  platform,the  driving  platform including a moving mechanism
    driven  by a single  motor  so that motions of pitch, yaw, and roll are
    imparted to the  seat . The mechanism consists of rotatable shafts (34,
    38) disposed at an angle to the vertical and are coupled to offset
    bearing  mountings (50, 54), as a result of which, during rotation of
    the shafts pitch and yawing motions are imparted to the  seat . Roll is
    produced by a bent rod in one of the  bearing  mountings...

...ADVANTAGE -  Imitates  the pelvic movements experienced when riding a
    horse , to assist in the recovery of physical injury or treatment of
    disabilities Used where not  practical  to provide a  horse  or where
    patients physical condition will not allow...
...Title Terms:  SEAT ;
International Patent Class (Main):  A63B-069/04
```

19/3,K/45 (Item 45 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

011744986 **Image available**
WPI Acc No: 1998-161896/199815
XRPX Acc No: N98-128804

Horse **riding** training apparatus - **has body which is** driven **to produce reciprocating motion via cam wheels and cam followers, which** simulates **motion of** horse **'s back**

Patent Assignee: HEYES J J (HEYE-I)
Inventor: HEYES J J
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
GB 2317350	A	19980325	GB 9619443	A	19960918	199815	B
GB 2317350	B	20000426	GB 9619443	A	19960918	200023	

Priority Applications (No Type Date): GB 9619443 A 19960918
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
GB 2317350	A		17	A63B-069/04	
GB 2317350	B			A63B-069/04	

Horse **riding** training apparatus - ...
...**has body which is** driven **to produce reciprocating motion via cam wheels and cam followers, which** simulates **motion of** horse **'s back**

...Abstract (Basic): The **apparatus** (10) includes a base (11), a body (12), a support (24,25) to hold the body on the base and a **drive** mechanism. The body is **pivotally** supported on the base with a transverse **pivot** **axis** and the **drive** is connected to the body via cam wheels and cam followers. Operation of the **drive** causes the body to adopt an up and down **pivot** action which **simulates** the motion of a **horse** 's back...

...parts mounted on either side of a longitudinal vertical plane. The flank parts are connected **pivotally** to each other and to the base. They are independently connected to respective cam wheels and cam followers to create reciprocal motion. The **pivot** **axis** is forwards of the cam followers...

...ADVANTAGE - **Simulates** **horse** 's motion without unduly stressing **horse** .

Title Terms: **HORSE** ;
International Patent Class (Main): **A63B-069/04**

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19/3,K/52     (Item 52 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004  Thomson Derwent. All rts. reserv.

010784239    **Image available**
WPI Acc No: 1996-281192/199629
XRPX Acc No: N96-236397
  Competing game appts using animal model e.g.  horse  racing - has cam
  mechanism that synchronizes leg movements according to speed of movement
  of model depicting natural animal
Patent Assignee: ETO DENKI KK (ETOD-N)
Number of Countries: 001  Number of Patents: 001
Patent Family:
Patent No      Kind   Date     Applicat No    Kind   Date      Week
JP 8117438      A   19960514  JP 94262618      A   19941026  199629  B

Priority Applications (No Type Date): JP 94262618 A 19941026
Patent Details:
Patent No  Kind Lan Pg   Main IPC    Filing Notes
JP 8117438    A     16 A63F-009/14

  Competing game appts using animal model e.g.  horse  racing...

...Abstract (Basic): 51) are operated by the cam depicting actual animal
    movement. The animal model has a  drive  mechanism (37) that operates
    the animal model over a surface board (31...

...game. Facilitates control of leg movement in accordance with velocity
    change. Provides profitable use on  practical  application...
...Title Terms:  APPARATUS ;
International Patent Class (Additional):  A63H-013/02
```

19/3,K/64 (Item 64 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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009374065 **Image available**
WPI Acc No: 1993-067543/199309
XRPX Acc No: N93-051816

Exercising device **particularly for jockey - has neck portion which can move relative to body with resilient connection whose stiffness can be varied to suit specific requirements**

Patent Assignee: PATZER M B (PATZ-I)
Inventor: PATZER M B
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
CA 2045297	A	19921206	CA 2045297	A	19910624	199309	B

Priority Applications (No Type Date): US 91710693 A 19910605
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
CA 2045297	A		25	A63B-069/04	

Exercising device **particularly for jockey...**

...Abstract (Basic): The exercising **device** is in the form of a thoroughbred race **horse** and includes member for imparting motion to the body of the **horse** to **simulate** the movement of a galloping **horse** .

...

...The **device** further has a neck portion which can move relative to the body about a horizontal **axis** , and a resilient connection is provided between the neck portion and body. The stiffness of which can be varied to suit specific requirements. The **device** also has a head portion which is capable of side-to-side movement relative to the neck portion under the constraint of a resilient member, to **simulate** lugging...

...ADVANTAGE - **Simulates** the movement of a galloping **horse** and which is suitable for the purpose of exercising and **training** jockeys
...Title Terms: **DEVICE** ;
International Patent Class (Main): **A63B-069/04**

19/3,K/65 (Item 65 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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009290461 **Image available**
WPI Acc No: 1992-417870/199251
XRPX Acc No: N92-318670

Horse **riding** training **appts. - has powered mechanism for moving body w.r.t. basse and neck portion** pivotally **mounted to and extending from portion**

Patent Assignee: GREENWOOD W R (GREE-I)
Inventor: GREENWOOD W R
Number of Countries: 002 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
GB 2256597	A	19921216	GB 9211549	A	19920601	199251	B
GB 2256597	B	19950111	GB 9211549	A	19920601	199505	
US 5429515	A	19950704	US 93100765	A	19930802	199532	N

Priority Applications (No Type Date): GB 9112709 A 19910613; US 93100765 A 19930802
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
GB 2256597	A		26	A63B-069/04	
GB 2256597	B		2	A63B-069/04	
US 5429515	A		10	A63B-069/04	

Horse **riding** training **appts...**

...**has powered mechanism for moving body w.r.t. basse and neck portion** pivotally **mounted to and extending from portion**

...Abstract (Basic): The **apparatus** comprises a body portion and a neck portion **pivotally** mounted to the body portion. The **apparatus** gives accurate **simulation** of the movements of a **horse** . It may have a powered mechanism for moving the body portion with respect to the base, and the neck portions may be **pivotally** mounted about two inclined **pivotal** **axes** .

...

...A head may be **pivotally** mounted to the neck about a horizontal **axis** and a link mechanism may extend between the head and body to cause the head to **pivot** in the opposite direction to the body. An impact-sensitive area may be provided to...

...USE - For jockeys to help **train** for **horse** riding

...Abstract (Equivalent): A **horse** riding **training** aid comprising a base, a body portion mounted on the base, a neck portion **pivotally** mounted to, and extending from, the body portion, and powered means for moving the body portion with respect to the base, the powered means being arranged to **drive** a **crank** mechanism, one end of which is **pivotally** connected to the body portion towards the rear of the body portion, the body portion...

...Abstract (Equivalent): The **training** appts comprises a body portion and a neck portion. The neck portion is **pivotally** mounted to the body portion. It may have a powered **device** for moving the body portion with respect to the base and the neck portions may be **pivotally** mounted about two curved **pivotal** **axes** . A head may be **pivotally** mounted to the neck about a horizontal **axis** and a link **device** may extend between the head and body to cause the head to **pivot** in the opposite direction to the body...

...USE/ADVANTAGE - Assisting riders e.g. jockeys, in their **training** for **horse** riding. Gives accurate **simulation** of the movements of a **horse**
.

Title Terms: **HORSE** ;
International Patent Class (Main): **A63B-069/04**

19/3,K/73   (Item 73 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

008506030   **Image available**
WPI Acc No: 1991-010114/199102
XRPX Acc No: N91-007867

Mechanical **work-out** horse **for polo player** training **- uses electric** motor **with** cranks **and** links connected **to retaining disc plate to** simulate **movement of** horse

Patent Assignee: COLLINS C S (COLL-I)
Inventor: COLLINS C S; WHELAN R M
Number of Countries: 014 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 407158	A	19910109	EP 90307287	A	19900703	199102	B
GB 2233913	A	19910123	GB 8915233	A	19890703	199104	
US 5085425	A	19920204	US 90547044	A	19900702	199208	
GB 2233913	B	19940302	GB 8915233	A	19890703	199407	

Priority Applications (No Type Date): GB 8915233 A 19890703
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 407158	A				
Designated States (Regional): AT BE CH DE ES FR GR IT LI LU NL SE					
GB 2233913	B		18	A63B-069/04	

Mechanical **work-out** horse **for polo player** training - ...

...**uses electric** motor **with** cranks **and** links connected **to retaining disc plate to** simulate **movement of** horse

...Abstract (Basic): The appts. has a stationary base **frame** (15), a body portion (24) on which a rider **sits** mounted on an upper support (27), movable relative to the base **frame** . A **drive** interconnects the base **frame** and upper support for continuously reciprocating the upper support and body portion forwards and backwards relative to the base **frame** along an intended rotary path. A rigid link (40) is **pivotally** connected between the upper support and base **frame** . The other end of the upper support is supported above the base **frame** by a separate linkage (43,44) spaced from the rigid link in the direction of...

...The **drive** is mounted offset from the linkage in the direction of movement and has two **cranks** **driven** by an electric motor (37). The first **crank** (49) is connected directly to the upper support to effect the reciprocal motion. The second **crank** (50) is **connected** to the **linkage** between the upper support and the base **frame** so horizontal **driving** movement of the second **crank** effects vertical extension or contraction of the linkage, so changing the attitude of the upper support relative to the base **frame** .
...

...USE/ADVANTAGE - **Simulates** natural smooth centering of a polo pony. Can be adapted to suit player of any
...Abstract (Equivalent): A workout **horse** comprising a stationary base **frame** (15), a body portion (14) on which a rider **sits** mounted on an upper support (27) which is movable relative to the base **frame** , and **drive** means interconnecting the base **frame** and the upper support for continuously reciprocating the upper support and thereby the body portion forwards and backwards relative to the base **frame** along an

intended rotary path, characterised in that for providing the body portion with the stimulated movable of a **horse** at one end of the upper movable support a rigid link (40) is **pivotally** connected between the upper support (27) and the base **frame** (15), the other end of the upper support being supported above the base **frame** by a separate linkage (43,44) spaced from the rigid link in the direction of movement of the upper support, and the **drive** means is mounted offset from the linkage in said direction of movement and comprises two **cranks** **driven** by an electric **motor** (37), the first **crank** (49) being connected directly to the upper support to effect said reciprocal motion of the upper support, and the second **crank** (50) being **connected** to said **linkage** between the upper support and the base **frame** whereby substantially horizontal **driving** movement of the second **crank** effects vertical extension or contraction of the linkage (43,44) thereby changing the attitude of the upper support (27) relative to the base **frame** (15), the combined action of the first and second **cranks** effecting a movement of the upper support and thereby the body portion which **simulates** the movement of a **horse** .
(

...Abstract (Equivalent): The workout **horse** includes a stationary base **frame** , a body portion on which a rider **sits** mounted on an upper support which is movable relative to the base **frame** , and a **drive** interconnecting the base **frame** and the upper support for continuously reciprocating the upper support and the body portion forwards and backwards relative to the base **frame** along an intended rotary path. For providing the body portion with the **simulated** movement of a **horse** at one end of the upper movable support, a rigid **link** is **pivotally** **connected** between the upper support and the base **frame** . The other end of the upper support is supported above the base **frame** by a separate linkage spaced from the rigid link in the direction of movement of...

...The **drive** is mounted offset from the linkage in the direction of movement and comprises two **cranks** **driven** by an electric **motor** . The first **crank** is connected directly to the upper support to effect the reciprocal motion of the upper support. The second **crank** is **connected** to the **linkage** between the upper support and the base **frame** .

Title Terms: MECHANICAL ;
International Patent Class (Main): A63B-069/04

19/3,K/74 (Item 74 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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008417419 **Image available**
WPI Acc No: 1990-304420/199040
XRPX Acc No: N90-234033

Training horse simulator **e.g. for handicapped children - includes pressure-sensitive switches operating indicators to inform user of correct execution of manoeuvres**

Patent Assignee: PEGASUS THERAPEUTIC (PEGA-N)
Inventor: ARMEN S A
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4957444	A	19900918	US 88272705	A	19881117	199040	B

Priority Applications (No Type Date): US 88272705 A 19881117

Training horse simulator **e.g. for handicapped children...**

...Abstract (Basic): A barrel **simulates** a **horse** 's back, an upper surface of the barrel being shaped to form a **seat** . A support **frame** carries the barrel above a floor. A head assembly **simulates** a **horse** 's neck and head. A **pivot** mount attaches the head assembly to an end of the barrel. A bit **simulator** is mounted to the head assembly...

...Right and left reins are attached to the bit **simulator** . The bit **simulator** can generate a stop signal. The **pivot** mount generates a right and left turn signals. The barrel can generate a pressure signal ...

...USE - **Horse simulator** for **training** a person e.g. a handicapped child to ride a **horse** .

Title Terms: **TRAINING ;**
International Patent Class (Additional): **A63B-069/00** ...

19/3,K/77 **(Item 77 from file: 350)**
DIALOG(R)File 350:Derwent WPIX
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007609077
WPI Acc No: 1988-243009/198835
XRPX Acc No: N88-184827
Horse **riding** simulator **for** training **of riders - has model** horse **with hydraulic actuator to reproduce accurately** horse **actions**
Patent Assignee: GRUTTEMEIER R (GRUT-I)
Inventor: GRUTTEMEIE R
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 3704150	A	19880825	DE 3704150	A	19870211	198835	B
DE 3704150	C	19901108				199045	

Priority Applications (No Type Date): DE 3704150 A 19870211
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 3704150	A		5		

Horse **riding** simulator **for** training **of riders...**

...**has model** horse **with hydraulic actuator to reproduce accurately** horse **actions**

...Abstract (Basic): The **simulator** has a model of a **horse** that is supported on guides (18) that move linearly to **simulate** the alking, trotting and galloping actions. **Transducers** (9,11) are located on the body and **saddle** to detect the pressures caused by the rider in directing the **simulator** .

...

...that has to be responded to. Within the platform base are hydraulic cylinders that reproduce **horse** movements...

...ADVANTAGE - Provides realistic **simulation** of riding conditions for **training** .

...Abstract (Equivalent): The life size model of a **horse** (1) has four movable legs (5) which are mounted on cylinder operated supports, installed in a **raised** platform (3...

...The **saddle** (7) and various places (9,10) on the model (1) are provided with pressure **sensors** . Mirrors (12,13) ahead and to one side of the lhorse allow the **learner** rider to check its riding positions. The : signals are also displayed on a monitor (2...

...The leg movement produced by the cylinders is derived from rotary cams. USE - **Learner** riders...
Title Terms: **HORSE** ;
International Patent Class (Additional): **A63B-069/04**

19/3,K/80 (Item 80 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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007329261
WPI Acc No: 1987-326268/198746
XRPX Acc No: N87-243852
Horseman trainer **with monitor and formers - has stand with ball** bearings **rotatable** saddle **and stirrups** loading **mechanism**
Patent Assignee: BELO PHYS CULT INST (BPHY-R)
Inventor: VASYUK V E; YUMASHEV V A; ZABAVSK G K
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
SU 1301420	A	19870407	SU 3968475	A	19851029	198746	B

Priority Applications (No Type Date): SU 3968475 A 19851029
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
SU 1301420	A		4		

Horseman trainer **with monitor and formers...**

...has stand with ball bearings **rotatable** saddle **and stirrups** loading **mechanism**

...Abstract (Basic): **Trainer** containing a **lever** operated **horse** -shaped body memory, control conversion and measuring units is augmented by ball **bearing** base, rotatable **saddle** and stirrups **loading** mechanism.$Monitor **simulates** a racing track with a model moving synchronously. **Sensors** monitor sportsman's hand and feet movement. **Sensors** signals are amplified processed and compared with a reference. Deviations are measured monitoring the riders behaviour.$USE/ADVANTAGE - In **horseman** 's **training** appts. Arrangement increases effectiveness. Bul.13/7.4.87 (4pp Dwg.No.0/4)
Title Terms: **TRAINING** ;
International Patent Class (Additional): **A63B-069/04**

19/3,K/82 (Item 82 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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004319260
WPI Acc No: 1985-146138/198524
XRPX Acc No: N85-110229

Toy bull **for** simulating **rodeo** training device **- has two** motors **located at either end of vertical support column to impart motion to toy via** crank lever **and** pivoted lever **arm**

Patent Assignee: WILLIAMS L J (WILL-I)
Inventor: WILLIAMS L J
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4519787	A	19850528	US 82418025	A	19820914	198524	B

Priority Applications (No Type Date): US 82418025 A 19820914
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4519787	A		7		

Toy bull **for** simulating **rodeo** training device - ...

...**has two** motors **located at either end of vertical support column to impart motion to toy via** crank lever **and** pivoted lever **arm**

...Abstract (Basic): reciprocal movements and is used in conjunction with a doll figure having a releasable securing **device** adapted for cooperation with a complementary securing **device** on the toy **mechanical bull** . The rotary and reciprocal movements of the **mechanical bull** will disengage the releasable securing **device** resulting in a **simulation** of a **mechanical bull** throwing a rider from its back...

...The movements of the toy are imparted by a **motor device** consisting of two **motors** . The first **motor** is mounted on a base member and is connected to a vertical support column. The second **motor** is mounted on top of the vertical support column and is connected to the body of the toy **bull** .
...

...ADVANTAGE - Closely **simulates** movements of actual **device** .

...Title Terms: **BULL** ;
International Patent Class (Additional): **A63H-011/00**

19/3,K/92 (Item 92 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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003262651
WPI Acc No: 1982-B3134E/198206
Riding training **appts. to** practice **ring jousting - consists of model** horse **with** saddle **movable in all three** axes **with ring guide track fitted above**
Patent Assignee: WOBI BIRKNER W GMBH (WOBI-N)
Inventor: BIRKNER W
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 3027099	A	19820204				198206 B

Priority Applications (No Type Date): DE 3027099 A 19800715
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 3027099	A		5		

Riding training **appts. to** practice **ring jousting...**

...**consists of model** horse **with** saddle **movable in all three** axes **with ring guide track fitted above**

...Abstract (Basic): The riding ring **training** appts. is esp. used to **practice** hitting rings or hoops with a lance. The **training** appts. consists of a reconstruction of a **saddled** **horse** positioned on a base and hydraulically, electrically or **mechanically** movable in all three **axes** .

...

...A guide track is located directly above the **horse** for at least one movable, detachable ring or hoop which extends parallel to the longitudinal **axis** of the reconstructed **horse** . There is a programmed control for the movement runs of the reconstructed **horse** and the track speed of the ring on the guide track is also **adjustable** .
...Title Terms: **TRAINING** ;
International Patent Class (Additional): **A63B-069/04**

19/3,K/93 (Item 93 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

003069318
WPI Acc No: 1981-G9356D/198130
Jockey trainer **with sprung three-arm** lever **as** horse **body - has** screw **type** drive **whose nut element is connected to** saddle **via** pivot

Patent Assignee: PERM AGRIC INST (PRAG); PERM POLY (PRPO)
Inventor: KELLER E A; STEPANOV V A
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
SU 776624	B	19800104				198130	B

Priority Applications (No Type Date): SU 2652230 A 19780731

Jockey trainer **with sprung three-arm** lever **as** horse **body**...

...**has** screw **type** drive **whose nut element is connected to** saddle **via** pivot

...Abstract (Basic): The jockey **trainer** comprises a base, model of a **horse** 's body on it in the form of a sprung three-arm **lever** , one arm carrying a moving element, connected to a **saddle** , with a counterweight on the second arm, and a **drive** including a shaped cam acting on the third arm. To **imitate** the movement of the **horses** body as its legs move, it has a bush fixed to the **saddle** and mounted on the moving element. The **drive** includes a **screw** mechanism, the **screw** and nut of which are attached by a **pivot** to the **saddle** and the moving element resp. The **saddle** thus moves in two planes. Bul. 41/7.11.80.
...Title Terms: **TRAINING** ;
International Patent Class (Additional): **A63B-069/04**

19/3,K/99 (Item 99 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

001966626
WPI Acc No: 1978-K5901A/197848

Show-jumping rider trainer **with** saddle **and body on base - has motion imparted to body by sprung three-arm** lever **activated by cam**

Patent Assignee: PIYASHEV S N (PIYA-I)
Inventor: PIYASHEV S N
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
SU 588994	A	19780123				197848 B

Priority Applications (No Type Date): SU 2195738 A 19751128

Show-jumping rider trainer **with** saddle **and body on base...**

...has motion imparted to body by sprung three-arm lever **activated by cam**

...Abstract (Basic): The **trainer** for show-jumping riders comprises a base-mounted model of a **horse** 's body carrying a **saddle** for the rider. To **imitate** the natural movements of the **horse** , it has motion imparted to the model in two directions perpendicular to each other in the vertical plane by a mechanism consisting of a sprung three-arm **lever** mounted on the base & a **drive** cam. One arm of the **lever** is connected to the model & another interacts with the cam. A counterweight is fixed on...

...the weight of the rider on arm (12), balancing the entire system. The rider mounts **saddle** (2). A **motor** is then switched on to operate cam (9). Arm (11), constantly in contact with the cam, due to **spring** (14) imparts motion via arm (10) to the model of the **horse** 's body. This moves in two directions perpendicular to each other in the vertical plane (up & down, forward & back) as the three-arm **lever** turns about **axis** (7...

...does not move (giving the rider a short breather), on sectors (IV-VII) the model **imitates** a canter, on sectors (VIII-VIII) it **imitates** the **horse** suspended in the air, on sectors (VIII-X) the two tempos of gallop, on sectors (X-XIII) the **rise** of the front of the **horse** approaching an obstacle, on sector (XII) the impact of the **horse** 's rear legs on the ground, on sectors (XII-IV) the flight of the **horse** over the obstacle, landing on all four legs. Thus the **trainer** creates conditions for **practising** the rider's attitude in various motions of the **horse** .

...Title Terms: **TRAINING** ;
International Patent Class (Additional): **A63B-069/04**

```
Set     Items   Description
S1       73745  HORSE? OR EQUESTR? OR EQUINE? OR HOBBYHORS? OR HIPPO()THER-
             AP? OR HIPPOTHERAP? OR BULL? ?
S2     1430971  SIMULAT? OR IMITAT? OR APPARAT? OR DEVICE? OR MACHIN? OR M-
             ECHANIC?
S3      767474  TRAIN? OR TEACH? OR TUTOR? OR DRILL? OR LEARN? OR PRACTIC?
             OR PRACTIS? OR EDUCAT? OR REHEARS? OR INSTRUCT?
S4      160726  SADDLE? OR SEAT? OR SIT OR SITS OR SAT OR SITTING
S5      228698  SLIDE? OR SLIDING OR GLIDE? OR GLIDING?
S6      688873  ELEVAT? OR LIFT? OR RAIS? OR LEVITAT? OR RISE? OR RISING OR
              (MOVE? OR MOVING)(2N)(VERTICAL? OR UPWARD?)
S7      406913  COMPUTER? OR CONTROLLER?
S8      491112  BUFFER? OR SHOCK()ABSORB? OR SPRING? OR CUSHION?
S9      430896  LOAD?
S10     755660  ADJUST? OR FINETUN? OR FINE()(TUNE? OR TUNING?) OR CALIBRA-
             T? OR TUNE? OR TUNING? OR ATTUNE? OR ATTUNING OR ALIGN? OR AL-
             INE?
S11     650479  DRIVE? OR DRIVING OR GEAR? OR MOTOR?
S12     372360  SENSOR? OR TRANSDUCER? OR DETECTOR? OR DETECTER? OR SENSIN-
             G()(ELEMENT? OR DEVICE?)
S13     277482  WORM? OR SCREW??? OR CONNECT?(2N)(ROD OR RODS OR LINK? OR -
             ARM OR ARMS OR SHAFT? OR ASSEMBL?)
S14     793022  AXIS? OR AXES? OR FRAME? OR BEARING? OR LEVER? OR PIVOT? OR
              CRANK? OR ROCK??? OR SPEED(2N)REDUC? OR DECELERAT?
S15      37171  IC=(A63B? OR G08B? OR S63G? OR A01K? OR A63H?)
S16      36705  S1 AND S2 AND S3
S17       1446  S16 AND S15
S18         36  S17 AND S1(10N)S2 AND S1(10N)S3
S19         65  S17 AND S1(10N)S2:S3 AND (S4 OR S7 OR S12)
S20         65  S19 AND (S4:S14)
S21         77  S18:S20
S22         77  IDPAT (sorted in duplicate/non-duplicate order)
? show files
File 348:EUROPEAN PATENTS 1978-2004/Jul W02
         (c) 2004 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20040715,UT=20040708
         (c) 2004 WIPO/Univentio
?
```

22/3,K/12 (Item 12 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01389994
BALANCE TRAINING DEVICE
VORRICHTUNG ZUM TRAINIEREN **DES GLEICHGEWICHTS**
DISPOSITIF D'ENTRAINEMENT DE L'ASSIETTE
PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 1291041 A1 030312 (Basic) = (US) 2002/0115536
WO 2001093961 011213
APPLICATION (CC, No, Date): EP 2001936868 010606; WO 2001JP4767 010606
PRIORITY (CC, No, Date): JP 2000171263 000607
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: **A63B-023/00** ; A61H-001/02
ABSTRACT WORD COUNT: 138
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200311	600
SPEC A	(English)	200311	4562
Total word count - document A			5162
Total word count - document B			0
Total word count - documents A + B			5162

BALANCE TRAINING DEVICE
VORRICHTUNG ZUM TRAINIEREN **DES GLEICHGEWICHTS**
INTERNATIONAL PATENT CLASS: **A63B-023/00** ...

...ABSTRACT A1

A balance **training** **apparatus** , which is preferably used for **training** a body balance function and a locomotive function of a user, and for rehabilitation for lumbago prevention, is provided. This **apparatus** has a **seat** for the user and a **driving** unit for **driving** the **seat** . The **driving** unit comprises a **drive** source and a power transmission unit for converting an output of the **drive** source into a **horse** -riding motion, which is a combination of a rectilinear reciprocating motion in a forward and backward direction (X) of the **seat** , a first **pivotal** reciprocating motion ((theta) y) about an **axis** extending in a horizontal direction substantially perpendicular to the forward and backward direction, and a second **pivotal** reciprocating

motion (-(theta) x) about an **axis** extending in the forward and backward direction, and transferring the **horse** -riding motion to the **seat** .

...SPECIFICATION A1

TECHNICAL FIELD

The present invention relates to a balance **training** **apparatus** having a **seat** for a user, which is preferably used for **training** a body balance function and a locomotive function of a user, and for rehabilitation for lumbago prevention.

BACKGROUND ART

Horse -riding is well known as an effective exercise for preventing lumbago and for increasing muscular...

...and loins. However, it is difficult that most of people living in cities go to **horse** -riding facilities from viewpoints of time and expense. In addition, there is a danger that an unripe person in **horse** -riding technique falls from a **horseback** . Therefore, attention is being given to an **apparatus** for providing an artificial **horse** -riding exercise by **simulating** an exercise that the user receives during the **horse** -riding.

For example, Japanese Patent Publication (kokoku) No. 6-65350 discloses a balance **training** **apparatus** comprising a **horse** -shaped **seat** for a user, six independent **drive** motors, and a power transmission unit for transferring outputs of these motors to the **seat** . In this **apparatus** , it is possible to separately control six motions of rectilinear reciprocating motions in a forward and backward direction, left and right direction, and an upward and downward direction, and **pivotal** reciprocating motions about an **axis** of the forward and backward direction, **axis** of the left and right direction, and an **axis** of the upward and downward direction. In the case of providing these rectilinear reciprocating motions and **pivotal** reciprocating motions to the user on the **seat** at required speeds, a position of the center of gravity of the user's body...

...out, bracing the legs to keep the head position constant, it is possible to efficiently **train** specific muscles of the user.

By the way, from a detail analysis of the present inventors about a relation between muscle motions in the **horse** -riding exercise and an effect of increasing the muscle power brought thereby, it has been...

...specific three motions in the above-described six motions is particularly effective for the balance **training** and the lumbago prevention. That is, it has been revealed that the rectilinear reciprocating motion in the forward and backward direction of the **seat** and the **pivotal** reciprocating motion about the **axis** extending in the horizontal direction substantially perpendicular to the forward and backward direction are effective for abdominal and back muscles, and the **pivotal** reciprocating motion about the **axis** extending in the forward and backward direction is effective for external abdominal oblique muscle. In...

...effects of increasing the muscle power cannot be expected. Thus, from the viewpoint of efficiently **training** the specific muscles of the user, there is still room for improvement in the conventional balance **training** **apparatus** .

In addition, since many motors built in the conventional **apparatus** bring about an upsizing of the **apparatus** , the ease-of-use of the **apparatus** is not often satisfied in average homes and offices. Moreover, the use of a lot of motors and the upsizing of the **apparatus** lead to poor cost/performance. Consequently, it has become a very expensive **apparatus** to the average homes.

SUMMARY OF THE INVENTION

Therefore, a primary concern of the present invention is to provide a balance **training** **apparatus** having the capability of giving a **horse** -riding exercise that is a combination of the three effective motions described above, to a user on a **seat** .

That is, the balance **training** **apparatus** has a **seat** for a user, and a **driving** unit for **driving** the **seat** . The **driving** unit comprises a **drive** source and a power transmission means for converting an output of the **drive** source into a **horse** -riding motion, which is a combination of a rectilinear reciprocating motion in a forward and backward direction of the **seat** , a first **pivotal** reciprocating motion about a first **axis** extending in a horizontal direction substantially perpendicular to the forward and backward direction, and a second **pivotal** reciprocating motion about a second **axis** extending in the forward and backward direction, and transferring the **horse** -riding motion to the **seat** .

In this balance **training** **apparatus** , there is an advantage of efficiently providing an exercise, which is particularly effective for **training** a body balance function and a locomotive function of the user and for rehabilitation for lumbago prevention, to the user on the **seat** . In addition, since a mechanism for transferring to the **seat** the other motions that do not provide remarkable exercise effects is not needed, it is possible to downsize the **apparatus** , and cut down on costs of the **apparatus** in such a degree that the **apparatus** can be easily used in average homes.

In the above balance **training** **apparatus** , it is preferred that a range of the rectilinear reciprocating motion is (+-)50 mm or less in the forward and backward direction, a range of the first **pivotal** reciprocating motion is (+-)5 degrees or less about the first **axis** , and a range of the second **pivotal** reciprocating motion is (+-)5 degrees or less about the second **axis** .

In addition, it is preferred that the balance **training** **apparatus** comprises a movement range **adjusting** means for **adjusting** each of ranges of the rectilinear reciprocating motion, the first **pivotal** reciprocating motion, and the second **pivotal** reciprocating motion.

It is further preferred that the balance **training** **apparatus** comprises a speed **adjusting** means for **adjusting** each of speeds of the rectilinear reciprocating motion, the first **pivotal** reciprocating motion, and the second **pivotal** reciprocating motion.

In addition, it is preferred that the balance **training** **apparatus** comprises a movement ratio **adjusting** means for **adjusting** a movement ratio among the rectilinear reciprocating motion, the first **pivotal** reciprocating motion, and the second **pivotal** reciprocating motion.

It is also preferred that the balance **training** **apparatus** comprises a control means for controlling the **driving** unit to provide the **horse** -riding motion according to a predetermined program.

It is preferred that the control means has a slow start means for controlling the **driving** unit such that a traveling speed of the **seat** gradually increases from the start of the **horse** -riding motion.

In addition, it is preferred that the control means controls the **driving** unit according to a program prepared in consideration of a warming-up exercise performed at the start of the **horse** -riding motion and a cool-down exercise performed at the end of the **horse** -riding motion. In particular, it is preferred that the control means controls the **driving** unit such that a traveling speed of the **seat** gradually increases at the warming-up exercise, and the traveling speed of the **seat** gradually decreases at the cool-down exercise.

It is further preferred that the control means comprises a heart rate **sensor** for measuring a heart rate of the user on the **seat** during the **horse** -riding motion, and a feedback means for **adjusting** at least one of a traveling speed and a movement range of the **seat** according to an output of the heart rate **sensor** .

In addition, it is preferred that the control means comprises a data input portion for...

...the user wants to burn by an exercise, exercise program determining portion for determining a **horse** -riding exercise program according to the calorie amount in the data input portion, and a...

...means has a maximum speed determining means for setting a maximum traveling speed of the **seat** to a desired value

Other features and advantages brought thereby of the present invention will...

...OF THE DRAWINGS

FIG. 1A is a schematic view showing a usage of a balance **training apparatus** according to an embodiment of the present invention, and FIG. 1 B is a perspective view of the balance **training apparatus** ; FIG. 2A is a schematic view illustrating a rectilinear reciprocating motion in a forward and backward direction (X) of a **seat** , FIG. 2B is a schematic view illustrating a first **pivotal** reciprocating motion ((theta) y) about an **axis** extending in a horizontal direction substantially perpendicular to the forward and backward direction, and FIG. 2C is a schematic view illustrating a second **pivotal** reciprocating motion ((theta) x) about an **axis** extending in the forward and backward direction;

FIG. 3 is a front cross-sectional view of the balance **training apparatus** according to the embodiment of the present invention;

FIG. 4 is a side cross-sectional view of the balance **training apparatus** ;

FIG. 5 is a side cross-sectional view of the balance **training apparatus** ; and

FIG. 6 is a cross-sectional view of a balance **training apparatus** according to another embodiment of the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

A balance **training apparatus** according to a preferred embodiment of the present invention is explained below in detail.

As shown in FIG 1A, when using the balance **training apparatus** of present embodiment, a user **sits** astride a **seat** 1. As shown in FIGS. 1B, 3 to 5, this **apparatus** comprises a base 4, a movable carrier 8 **pivotally** supported about an **axis** of a first shaft 6 described later by the base 4, **driving** unit 2 mounted on the movable carrier 8, a pedestal 3 movably supported to the...

...carrier 8 by use of a pair of first links 9 described later, and the **seat** 1 fixed to the a top plate 3a of the pedestal 3. In FIG. 1B...

...for holding the user's feet. The numeral 20 designates a cover, in which the **driving** unit 2 is installed. In addition, the numeral 55 designates a grip, which can be used to keep the balance by the user on the **seat** during the **horse** -riding exercise. The numeral 57 designates an operating panel with a main switch of the balance **training apparatus** and so on.

The **seat** 1 is of a **saddle** shape having a concave at a substantially center portion between the forward and backward ends thereof, which is formed such that the user can **sit** astride this concave. The **driving** unit 2 is mainly composed of a single **motor** 16 and a power transmission unit for transferring an output of the **motor** to the **seat** 1. This power transmission unit converts a rotational output of the **motor** 16 into a **horse** -riding motion, which is a combination of a rectilinear reciprocating motion in the forward and backward direction (X) of the **seat** , as shown in FIG. 2A, a first **pivotal** reciprocating motion ((theta)y) about an **axis** extending in a horizontal direction substantially perpendicular to the forward and backward direction, as shown in FIG. 2B, and a second **pivotal** reciprocating motion ((theta)x) about an **axis** extending in the forward and backward direction, as shown in FIG. 2C, and transfers the **horse** -riding motion to the **seat** . To facilitate the understanding of the present invention, a first **crank** mechanism for converting the output of the **motor** 16 into the rectilinear reciprocating motion and the first **pivotal** reciprocating motion of the **seat** 1 is firstly explained. Subsequently, a second **crank** mechanism for converting the **motor** output into the second **pivotal** reciprocating motion of the **seat** 1 is explained.

(1) First **Crank** Mechanism

As shown in FIGS. 3 to 5, the single **motor** 16 is fixed to the movable carrier 8, on which the **driving** unit 2 is mounted, by use of a **motor** mounting stand 17. A rotating shaft 19 of the **motor** 16 penetrates a **motor** case 18, and projects from opposite ends of the **motor** case to provide a rotational output. In this embodiment, a rear end of the rotating shaft 19 is used to provide the rectilinear reciprocating motion and the first **pivotal** reciprocating motion, and the front end of the rotating shaft is used to provide the second **pivotal** reciprocating motion.

A **worm** 21 is provided at the rear end of the rotating shaft 19. The **worm** 21 is engaged to a **worm** wheel 23. The **worm** wheel 23 is attached to a shaft pin 25 extending in a horizontal direction. The shaft pin 25 is coupled to a first **crank** 27. The first **crank** 27 is coupled with one end of a first link 9 by a first rod...

...9 is coupled to a side wall 3b of the pedestal 3, to which the **seat** 1 is secured, by use of a shaft pin 11. The other end of the...

...pin 10. The first link 9 is provided at each of both sides of the **seat** 1. However, a **crank** motion is transferred to only one of the first links 9 (right-side one in...

...The other one of the first links (left-side one in FIG. 3) is dependently **driven** . In addition, as shown in FIG. 3, the shaft pins (10, 11) are arranged such...

...shaft pins (10, 11) is substantially perpendicular to the forward and backward direction of the **seat** 1.

In the power transmission mechanism described above, when the **motor** 16 is activated, the **worm** 21 rotates the **worm** wheel 23, so that the first **crank** 27 revolves about the shaft pin 25. This **crank** motion of the first **crank** 27 is transferred to the first link 9 through the first rod 30. As a...

...the first link 9 provides an oscillatory reciprocating motion to the pedestal 3 with the **seat** 1.

By the way, the motion of the **seat** 1 is guided by a second link 14 for coupling a front portion of the...

...15.
In the presence of the second link 14, when the first link 9 is **pivotally** moved in a counterclockwise direction about the pin shaft 10 from a position shown in...

...front portion of the pedestal 3. On the contrary, when the first link 9 is **pivotally** moved in a clockwise direction about the pin shaft 10 from the position shown in FIG. 4, the **seat** 1 moves rearward such that a rear end portion of the **seat** 1 is lower than a front end portion of the **seat** 1.
Thus, the reciprocating swing motions of the first and second links 9, 14 provides to the **seat** 1 a combined motion of the rectilinear reciprocating motion in the forward and backward direction (X) of the **seat** and the first **pivotal** reciprocating motion ((theta)y) about the **axis** extending in the horizontal direction substantially perpendicular to the forward and backward direction.

(2) Second **Crank** Mechanism
A **worm** 22 provided at the front end of the rotating shaft 19 of the **motor** 16 is used to provide the second **pivotal** reciprocating motion to the **seat** 1. The **worm** 22 is engaged to a **worm** wheel 24. As shown in FIG. 3, the **worm** wheel 24 is attached to a shaft pin 26 extending in a horizontal direction. A second **crank** 28 is coupled to one end of the shaft pin 26. The second **crank** 28 is coupled with the base 4 by a second rod 31. The second rod...

...that is a universal joint.
The movable carrier 8 is supported so as to be **pivotally** movable about the first shaft 6 extending in the forward and backward direction against the by the front and rear walls 5b. A pair of **bearings** 7 are held by **bearing** holding members 8c projecting downward from front and rear ends of a bottom plate 8a...
...8. Both ends of the first shaft 6 are also supported by the pair of **bearings** 7, so that the movable carrier 8 can be **pivotally** moved about the first shaft 6. In the present embodiment, as understood from the front view of FIG. 3, the first and second **crank** mechanisms are positioned at the right and left sides of the first shaft 6, respectively.
As described above, the movable carrier 8 with the **seat** 1, the pedestal 3 and the **driving** unit 2 thereon is **pivotally** movable about the first shaft 6 against the base 4. Therefore, when the **motor** 16 is activated, the **worm** 22 provided at the front end of the **motor** shaft 19 rotates the **worm** wheel 24, so that the second **crank** 28 revolves about the shaft pin 26. A **crank** motion of this second **crank** 28 is transferred through the second rod 31. However, since one end of the second...

...allowed to do a reciprocating swing motion about the first shaft 6. Thus, by the **crank** motion of the second **crank** 28, the movable carrier 8 with the pedestal 3 and the **seat** 1 thereon is allowed to do the reciprocating swing motion about the first shaft 6. Since one end of the second **crank** 28 is coupled to the base 4 through the ball joint 32, the oscillatory motion...
...the first shaft 6 is permitted.
As a result, the rotational output of the single **motor** 16 is converted into an artificial **horse** -riding motion, which is a

combination of the rectilinear reciprocating motion in the forward and backward direction of the **seat** , the first and second **pivotal** reciprocating motions, by the first and second **crank** mechanisms, and the **horse** -riding motion is provided to the **seat** 1. This means that the **seat** 1 can oscillate with 3 degrees of freedom. Myoelectric potentials for abdominal and back muscles are obtained by the rectilinear reciprocating motion and the first **pivotal** reciprocating motion, and the myoelectric potentials for external abdominal oblique muscle are obtained by the second **pivotal** reciprocating motion. Since these myoelectric potentials caused at the time of stretching the respective muscles are alternately obtained, it is possible to provide remarkable effects of balance **training** .

Therefore, a preferred balance **training** **apparatus** of the present invention has a **seat** for a user, and a **driving** unit for moving the **seat** . The **driving** unit comprises a single **motor** and a power transmission unit for converting an output of the single **motor** into an artificial **horse** -riding motion, which is a combination of a rectilinear reciprocating motion in a forward and backward direction of the **seat** , a first **pivotal** reciprocating motion about a first **axis** extending in a horizontal direction substantially perpendicular to the forward and backward direction, and a second **pivotal** reciprocating motion about a second **axis** extending in the forward and backward direction, and transferring the **horse** -riding motion to the **seat** .

In particular, it is preferred that the power transmission unit of the present invention is composed of a first **crank** mechanism of converting a rotational output provided from one end of a rotating shaft of the single **motor** into a first **crank** motion to obtain the rectilinear reciprocating motion in the forward and backward direction of the **seat** , and the first **pivotal** reciprocating motion about the first **axis** extending in the horizontal direction substantially perpendicular to the forward and backward direction, and a second **crank** mechanism of converting the rotational output provided from the other end of the rotating shaft of the single **motor** into a second **crank** motion to obtain the second **pivotal** reciprocating motion about the second **axis** extending in the forward and backward direction.

It is preferred that the balance **training** **apparatus** of the present invention comprises a movement range **adjusting** unit for **adjusting** movement ranges in the **horse** -riding motion. For example, as shown in FIG. 6, to **adjust** a range of the rectilinear reciprocating motion in the forward and backward direction (X) and a range of angle ((theta)y) of the second **pivotal** reciprocating motion of the **seat** , an effective length of the first rod 30 can be determined by tightening a nut...

...the first link 9 (i.e., the position of the shaft pin 10) can be **adjusted** in an elongate hole 60, which is formed in a side wall 8b of the...

...On the other hand, to change a range of angle ((theta) x) of the second **pivotal** reciprocating motion of the **seat** , it is preferred that a radius of gyration of the second **crank** is **adjustable** . Each of these movement range **adjusting** units works as the movement range **adjusting** means of the present invention. In particular, when the balance **training** **apparatus** of the present invention has these movement range **adjusting** units, a movement ratio among the three different motions can be optionally determined. Therefore, the balance **training** **apparatus** also has a movement ratio **adjusting** means.

The movement range and the ranges of angles in the oscillatory reciprocating motion of the **seat** can be changed by the movement range **adjusting** means described above, ...50 mm or less in the forward and backward direction, the range of the first **pivotal** reciprocating motion is (+-)5 degrees or less about the first **axis** , and the range of the second **pivotal** reciprocating motion is (+-)5 degrees or less about the second **axis** . In this case, it is possible to efficiently provide improved muscle **training** and balance **training** effects to the user.

In addition, by controlling a rotation speed of the **motor** 16, the reciprocating motions can be provided at various oscillation speeds. In particular, it is preferred that the present **apparatus** comprises a maximum-speed determining means for setting a maximum traveling speed of the **seat** to a desired value.

To provide an effective exercise for balance **training** to the user by the balance **training** **apparatus** of the present invention, it is also preferred that the present **apparatus** comprises a control unit for controlling **driving** conditions such as **drive** speed and exercise continuation time according to a predetermined program menu. In this case, it is possible to provide a suitable **horse** -riding exercise in accordance with the program menu prepared for individual purposes of increasing the...

...rehabilitation for lumbago prevention, and so on.

For example, it is preferred that the present **apparatus** comprises a slow start means for controlling the **driving** unit such that a traveling speed of the **seat** gradually increases from the start of **driving** . In addition, it is preferred that the control unit controls the **driving** unit according to a program prepared in consideration of a warming-up exercise for the user at the start of the **horse** -riding motion and a cool-down exercise for the user at the end of the **horse** -riding motion. Concretely, it is preferred that the control unit controls the **driving** unit according to the program prepared such that the traveling speed of the **seat** gradually increases (slow start) at the warming-up exercise, and the traveling speed of the **seat** gradually decreases (slow end) at the cool-down exercise. In this case, the muscles of...

...carried out along the program, there is a case that the exercise becomes an excessive **load** due to a poor physical condition of the user. For these reasons, it is preferred that the present **apparatus** comprises a heart-rate **sensor** for measuring a heart rate of the user on the **seat** 1 during the **horse** -riding motion, and a feedback unit for **adjusting** at least one of the traveling speed and the movement range of the **seat** according to an output of the heart-rate **sensor** . In this case, since an adequate amount of exercise is determined according to the physical condition of the user during the exercise, the reliability in safety of the **apparatus** is further improved.

In addition, when the user uses the balance **training** **apparatus** to burn desired calories, it is preferred that the present **apparatus** comprises a data input portion for inputting an amount of calories that the user wants...

...reach the desired calorie consumption amount set by the user. Therefore, it is effective to **raise** the aspirations of attaining the user's goal. For example, it is preferred that the calorie display portion is positioned at an operating panel 57 of the **seat** 1.

INDUSTRIAL APPLICABILITY

As described above, since the present **apparatus** can provide a **simulated** **horse** -riding, three-dimensional motion to the **seat** , on which the user is **sitting** , it is possible to efficiently **train** specific muscles of the user. That is, it is possible to efficiently provide to the user the **horse** -riding motion, which is a combination of the rectilinear reciprocating motion in the forward and backward direction and the first **pivotal** reciprocating motion that are effective to **train** abdominal and back muscles, and the second **pivotal** reciprocating motion that is effective to **train** external abdominal oblique muscle.

In addition, when the balance **training** **apparatus** provides the **horse** -riding motion by use of the single **motor** , it is possible to achieve a downsizing of the **apparatus** , and remarkably improve the cost/performance. As a result, the **apparatus** for providing the exercise effective for improving the muscle power and for the lumbago prevention becomes available to average homes as well as the commercial use. The balance **training** **apparatus** of the present invention is also effective to another purposes such as resolving lack of exercise, refreshing and a shape-up exercise.

In the case that the **training** program can be determined according to gender, age, physique and physical conditions of the user...

...manner, there is an advantage that the user is allowed to safely use the balance **training** **apparatus** while avoiding a situation that an excessive amount of exercise is applied to the user.

...CLAIMS A1

1. A balance **training** **apparatus** having a **seat** for a user, and a **driving** unit for **driving** said **seat** ,

   wherein said **driving** unit comprises a **drive** source and a power transmission means for converting an output of said **drive** source into a **horse** -riding motion, which is a combination of a rectilinear reciprocating motion in a forward and backward direction of said **seat** , a first **pivotal** reciprocating motion about a first **axis** extending in a horizontal direction substantially perpendicular to said forward and backward direction, and a second **pivotal** reciprocating motion about a second **axis** extending in said forward and backward direction, and transferring said **horse** -riding motion to said **seat** .
2. The balance **training** **apparatus** as set forth in claim 1, wherein a range of said rectilinear reciprocating motion is (+-)50 mm or less in said forward and backward direction, a range of said first **pivotal** reciprocating motion is (+-)5 degrees or less about the first **axis** , and a range of said second **pivotal** reciprocating motion is (+-)5 degrees or less about the second **axis** .
3. The balance **training** **apparatus** as set forth in claim 1, comprising a movement range **adjusting** means for **adjusting** each of ranges of said rectilinear reciprocating motion, said first **pivotal** reciprocating motion, and said second **pivotal** reciprocating motion.

4. The balance **training** **apparatus** as set forth in claim 1, comprising a speed **adjusting** means for **adjusting** each of speeds of said rectilinear reciprocating motion, said first **pivotal** reciprocating motion, and said second **pivotal** reciprocating motion.
5. The balance **training** **apparatus** as set forth in claim 1, comprising a movement ratio **adjusting** means for **adjusting** a movement ratio among said rectilinear reciprocating motion, said first **pivotal** reciprocating motion, and said second **pivotal** reciprocating motion.
6. The balance **training** **apparatus** as set forth in claim 1, comprising a control means for controlling said **driving** unit to provide said **horse** -riding motion according to a predetermined program.
7. The balance **training** **apparatus** as set forth in claim 6, wherein said control means has a slow start means for controlling said **driving** unit such that a traveling speed of said **seat** gradually

increases from the start of said **horse** -riding motion.

8. The balance **training** **apparatus** as set forth in claim 6, wherein said control means controls said **driving** unit according to a program prepared in consideration of a warming-up exercise performed at the start of said **horse** -riding motion and a cool-down exercise performed at the end of said **horse** -riding motion.
9. The balance **training** **apparatus** as set forth in claim 8, wherein said control means controls said **driving** unit such that a traveling speed of said **seat** gradually increases at said warming-up exercise, and the traveling speed of said **seat** gradually decreases at said cool-down exercise.
10. The balance **training** **apparatus** as set forth in claim 6, wherein said control means comprises a heart rate **sensor** for measuring a heart rate of the user on said **seat** during said **horse** -riding motion, and a feedback means for **adjusting** at least one of a traveling speed and a movement range of said **seat** according to an output of said heart rate **sensor** .
11. The balance **training** **apparatus** as set forth in claim 6, wherein said control means comprises a data input portion...

...the user wants to burn by an exercise, exercise program determining portion for determining a **horse** -riding exercise program according to the calorie amount in said data input portion, and a...

...display portion for displaying consumed calories by the user during the exercise.

12. The balance **training** **apparatus** as set forth in claim 6, wherein said control means has a maximum speed determining means for setting a maximum traveling speed of said **seat** to a desired value.
13. The balance **training** **apparatus** as set forth in claim 1, wherein said **drive** source has a single **motor** .

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01098546
Therapeutic device **for** training **the back muscles by** simulation **of the movements of a** horse **, and method of driving this** device
Therapeutisches Gerat zum Training **der Ruckenmuskulatur durch** Simulation **der Bewegungen eines Pferdes und Verfahren zum Betreiben dieses Gerates**
Appareil therapeutique pour l'entrainement des muscles du dos par simulation **des mouvements d'un cheval, et procede d'entrainement de cet appareil**
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CLAIMS A	(German)	9950	632
SPEC A	(German)	9950	1815
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Total word count - documents A + B			2447

Therapeutic device **for** training **the back muscles by** simulation **of the movements of a** horse **, and method of driving this** device
Therapeutisches Gerat zum Training **der Ruckenmuskulatur durch** Simulation **der Bewegungen eines Pferdes und Verfahren zum Betreiben dieses Gerates**
Appareil therapeutique pour l'entrainement des muscles du dos par simulation **des mouvements d'un cheval, et procede d'entrainement de cet appareil**
INTERNATIONAL PATENT CLASS: A63B-023/02 ...

... A63B-069/04

...ABSTRACT Translated)

Therapeutic **machine** for exercising back muscles by **simulating** movement of **horse**
The **seat** (4) comprises at least four segments (17,19), each of which

is linked to a **drive** mechanism (3) that is also linked to the **seat** as a whole.

An Independent claim is also included for a method of operating a therapeutic **machine** by **lifting** diagonally opposed **seat** segments, achieved by **pivoting** them about a ball joint (26) in the outside of the **machine** towards the middle of the **seat** , and at the same time lowering the other two segments.

...ABSTRACT A2

Die Erfindung betrifft ein therapeutisches Gerat zum **Training** der Ruckenmuskulatur durch **Simulation** der Bewegungen eines Pferdes und ein Verfahren zum Betreiben dieses Gerates, wobei das Gerat im...

SPECIFICATION Die Erfindung betrifft ein therapeutisches Gerat zum **Training** der Ruckenmuskulatur durch **Simulation** der Bewegungen eines Pferdes und ein Verfahren zum Betreiben dieses Gerates, wobei das Gerat im...Reiten, schrage Lage gebracht, die er durch korpereigene Bewegungen kompensieren mus und somit seine Ruckenmuskulatur **trainiert** . Wahrend der sich in der 1. und 2. Phase sowie der 3. und 4. Phase...

CLAIMS 1. Therapeutisches Gerat zum **Training** der Ruckenmuskulatur durch **Simulation** der Bewegungen eines Pferdes, wobei das Gerat im wesentlichen aus einem Gestell und einem, von...

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00431345
Workout horse .
Trainingspferd .
Cheval mecanique d'entrainement.
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CLAIMS A	(English)	EPABF1	694
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Workout horse .
Trainingspferd .
INTERNATIONAL PATENT CLASS: **A63B-069/04**

...ABSTRACT A1

A workout **horse** comprises a stationary base **frame** (15), a body portion (14) on which a rider **sits** mounted on an upper support (27) which is movable relative to the base **frame** , and **drive** means interconnecting the base **frame** and the upper support for continuously reciprocating the upper support and thereby the body portion forwards and backwards relative to the base **frame** along an intended rotary path. For providing the body portion (14) with the **simulated** movement of a **horse** at one end of the upper movable support a rigid link (40) is **pivotally** connected between the upper support (27) and the base **frame** (15), the other end of the upper support being supported above the base **frame** by a separate linkage (43, 44) spaced from the rigid link in the direction of movement of the upper support, and the **drive** means is mounted offset from the linkage in said direction of movement and comprises two **cranks** **driven** by an electric **motor** (37), the first **crank** (49) being connected directly to the upper support to effect said reciprocal motion of the upper support, and the second **crank** (50) being **connected** to said **linkage** between the upper support and the base **frame** whereby substantially horizontal **driving** movement of the second **crank** effects vertical extension or contraction of the linkage (43, 44) thereby

changing the attitude of the upper support (27) relative to the base **frame** (15), the combined action of the first and second **cranks** effecting a movement of the upper support and thereby the body portion which **simulates** the movement of a **horse** .

In a particular embodiment the **horse** is for use by polo players and the **drive** means effects a movement of the upper support (27) and thereby the body portion (14) which **simulates** the natural cantering movement of a polo pony. ...

...SPECIFICATION A1

WORKOUT **HORSE**

This invention relates to a workout **horse** . More particularly but not exclusively, the invention relates to a workout **horse** for use by polo players.

It is known for a polo player to workout on a static, replica of a **horse** , conventionally made of wood, which is positioned at the centre of a dish shaped surface...

...the confines of the surface and tend to roll back towards the player on the **horse** .

A **mechanical** bucking steer is also known. In this case the replica steer spins and is activated to provide an intermittent bucking motion.

According to the invention there is provided a workout **horse** comprising a stationary base **frame** , a body portion on which a rider **sits** mounted on an upper support which is movable relative to the base **frame** , and **drive** means interconnecting the base **frame** and the upper support for continuously reciprocating the upper support and thereby the body portion forwards and backwards relative to the base **frame** along an intended rotary path, wherein for providing the body portion with the **simulated** movement of a **horse** at one end of the upper movable support a rigid **link** is **pivotally connected** between the upper support and the base **frame** , the other end of the upper support being supported above the base **frame** by a separate linkage spaced from the rigid link in the direction of movement of the upper support, and the **drive** means is mounted offset from the linkage in said direction of movement and comprises two **cranks driven** by an electric **motor** , the first **crank** being connected directly to the upper support to effect said reciprocal motion of the upper support, and the second **crank** being **connected** to said **linkage** between the upper support and the base **frame** whereby substantially horizontal **driving** movement of the second **crank** effects vertical extension or contraction of the linkage thereby changing the attitude of the upper support relative to the base **frame** , the combined action of the first and second **cranks** effecting a movement of the upper support and thereby the body portion which **simulates** the movement of a **horse** .

Preferably said linkage comprises a pair of links **pivotally** attached to the upper support and the base **frame** respectively and **pivotally** connected together about a transverse **axis** disposed between the upper support and the base **frame** , and on which **axis** said pair of links are **pivotally** attached to the second **crank** .

It is also preferred that the two **cranks** comprise **crank** wheels mounted on a common output shaft of the electric **motor** , the first **crank** wheel having a **connecting rod pivotally connected** at its free end to the upper support, and the second **crank** wheel having a **connecting rod pivotally connected** to said **linkage** . Preferably the relative rotary position of the two **crank** wheels on the common shaft is infinitely **adjustable** .

The **drive** means is preferably mounted on the base **frame** between said link and said linkage.

Preferably the **horse** is for use by polo players and the **drive** means effects a movement of the upper support and thereby the body portion which **simulates** the natural smooth cantering movement of a polo pony.
The body portion is preferably carried...

...of the invention, the body portion may have a main portion on which the rider **sits** , a neck portion integral with the main portion and a head portion **pivotally** mounted on the end of the neck portion, reins for **pivoting** the head portion, and indicator means which indicate to the rider when the head portion is **pivoted** beyond a predetermined limit.
One particular use for the workout **horse** according to the invention is to enable the rider to **practice** hitting an object, e.g. for a polo player or potential polo player to **practice** hitting a polo ball. For this purpose, the workout **horse** may be provided in combination with a known dish shaped surface on which, e.g. at its centre, the workout **horse** is stood or preferably fixed. The rider then **sits** on the **horse** for **practicing** hitting polo balls. The contour of the surface is designed to retain the balls within the confines of the surface and to return them towards the **horse** .
By way of example, a specific embodiment in accordance with the invention will be described...

...the accompanying diagrammatic drawings in which:-

Figure 1 is a perspective view of a workout **horse** and part of a **practice** surface area suitable for use by a polo player;

Figure 2 is a side **elevation** of the **drive** means within the base portion of the workout **horse** of Figure 1;

Figure 3 is a front **elevation** of the **drive** means in relation to the head of the workout **horse** of Figure 1;

Figure 4 is a rear **elevation** of the **drive** means;

Figure 5 is an enlarged side **elevation** of the **crank** wheel seen in Figure 2;

Figure 6 is a section along line 5-5 in Figure 5;

Figure 7 shows the rotary path of the body portion effected by the **drive** means of Figure 2; and

Figure 8 is a perspective view of part of a modified workout **horse** .

This example concerns a workout **horse** for particular use by polo players or potential polo players. As with a conventional, stationary workout **horse** , the **horse** is stood or fixed generally centrally of a dish-shaped **practice** surface area. A rider on the **horse** then **practices** hitting polo balls over the surface which by virtue of its contour retains the balls within the confines of the surface area and tends to return them towards the **horse** .
With reference to Figures 1 to 7, the **practice** surface area 10 is of conventional design and in this embodiment is formed of reinforced...

...centre. If desired the rim could additionally have protective netting around its periphery.
The workout **horse** 13 is positioned, for example, at the centre of the **practice** surface 10. The **horse** comprises a body portion 14 on which the rider **sits** and a stationary base **frame** 15 which, in this embodiment, is fixed to the ground by bolts 35 (Figures 3...

...cover 16 may be employed if desired. Under the base portion cover 16 is a **drive** mechanism 17 to move the body portion 14 relative to the base **frame** 15 in a manner which so far as possible **simulates** the natural cantering movement of a polo pony.
The body portion 14 has a main portion 18 carrying a **saddle** 19 and

stirrups 20 and, in this embodiment, an integral neck and head portion 21 with reins 22 attached to mouth bit rings 23. Also, in this embodiment, the **saddle** 19 is formed integrally with the main portion 18 as a moulding of reinforced glass...

...is mounted on a substantially central intermediate transverse member 26 of an upper movable support **frame** 27. The column passes through an aperture in the transverse member 26 and is attached...

...to the undersurface of the transverse member. Spaced apart longitudinal members 28 of the upper **frame** 27 are also connected by end transverse members 29. The intermediate transverse member 26 is...

...members so that, if desired, the position of the intermediate transverse member 26 can be **adjusted** longitudinally of the **frame** 27. The upper **frame** 27 thereby carries the body portion 14 for movement therewith.

Both ends of the upper **frame** 27 are linked to respective ends of the stationary base **frame** 15 which likewise has spaced apart longitudinal members 33 and end transverse members 34. The base **frame** 15 is fixed to the ground by the above-mentioned bolts 35 passing through holes in the transverse members 34 and rubber pads 36. Mounted on the base **frame** 15 is an electric **motor** 37 for **driving** the output shaft 38 of a reduction **gear** box 39, the shaft 38 extending transversely of the base **frame** . The **gear** box 39 is centrally bolted to the base **frame** 15 employing four mounting blocks 62 and two further transverse members 63.

The rear ends of the base **frame** 15 and the upper **frame** 27 are linked by two identical rigid links 40. The ends of each link 40 are carried on shafts 41 extending between **bearing** blocks 42 bolted on the longitudinal members of the respective **frame** (Figures 2 and 4). Similarly mounted shafts 41 at the front ends of the two **frames** are linked by a linkage comprising two pairs of links 43, 44 (Figures 2 and 3). Attached to the adjacent ends of each pair of links 43, 44 are face **bearings** 45 carried on a common shaft 46. In this embodiment, the **bearing** blocks 42 and face **bearings** 45 are R.H.P. ball race type **bearings** .

The upper **frame** 27 is thus reciprocable longitudinally of the base **frame** 15 and the front end of the upper **frame** can be **moved vertically** up and down relatively to the rear end of the upper **frame** . For effecting this movement, two **crank** wheels 47, 48 are mounted on the output shaft 38 of the **gear** box 39 between the rear links 40 and the front pairs of links 43, 44. The **crank** wheel 47 on the right-hand side as viewed in Figures 3 and 5 has a **connecting rod** 49 **pivotally** mounted at one end by an eye end ball race **bearing** to the **crank** wheel, and its other end **pivotally** mounted by a similar **bearing** on an extension of the shaft 41 at the front end of the upper **frame** . **Screw** threaded terminal blocks 52 on the **connecting rod** 49 allow a degree of length **adjustment** which is then locked by a locking ring 53. Rotation of the **crank** wheel 47 will thereby effect longitudinal movement of the upper **frame** 27 relative to the base **frame** 15.

The other **crank** wheel 48 has a similar **connecting rod** 50 **pivotally** mounted at one end to the **crank** wheel, and its other end **pivotally** mounted on an extension of the shaft 46 interconnecting the pairs of front links 43, 44. Rotation of the **crank** wheel 48 will thereby effect **vertical movement** of at least the front end of the upper **frame** 27 relative to the base **frame** 15. Accordingly, rotation of both **crank** wheels 47, 48 simultaneously reciprocates the upper **frame** 27 and hence the body portion 14 of the **horse** 13 forwards and backwards along an intended rotary path. In this embodiment, the rotary path achieved is illustrated in Figure 7.

The use of twin **cranks** results in such an irregular rotary path, rather than a reciprocal motion with identical forward and return movements which would result from a single **crank** . Moreover, in this embodiment, the angular **adjustment** between the two **crank** wheels is infinitely **adjustable** . Similarly, the throw of each **crank** and the length of the respective **connecting rod** are **adjustable** either individually or in combination giving a variety of resulting motions.

As shown in Figure 2, **connecting rod** 49 effecting longidudinal movement of the upper **frame** 27 is mounted on the associated **crank** wheel 47 substantially at the periphery of the **crank** wheel, whilst the corresponding end of the other **connecting rod** 50 is mounted radially closer to the centre of the **crank** wheel 48. This has the effect of reducing the **vertical movement** effected by the forward links 43, 44 compared with mounting the **connecting rod** 50 nearer the periphery of the **crank** wheel 48.

The means for mounting the two **crank** wheels 47, 48 on the **gearbox** output shaft 38 are also slightly different. As shown in Figure 2, each **crank** wheel is keyed onto the shaft by key 54 and is locked onto the shaft...

...of tapered housing in which concentric parts 55, 56 are expanded by rotation of grub **screws** 57, the radially outer part 56 having a shoulder 58 which is bolted by four bolts 59 to the **crank** wheel. In the case of the **crank** wheel 48, these four bolts are not illustrated but engage in respective threaded holes in the **crank** wheel, which could be mounted in any one of four alternative positions relative to the...

...respective key 54. However, in this embodiment, the four mounting bolts 59 for the other **crank** wheel 47 have eight alternative holes 60 in the outer part 56 of the tapered...

...degree) relative to the centre of the shaft 38. Thereby the rotary position of the **crank** wheel 47 relative to that of the **crank** wheel 48 is infinitely **adjustable** .

In this embodiment, the electric **motor** 37 is a 2.2. Kw 3 phase **motor** controlled by a variable speed AC **drive** inverter, using single phase input and giving 3 phase output with variable frequency allowing up...

...ramp up and ramp down times to give a soft start and stop characteristic. The **gear** box 39 also gives a reduction of 30:1.

In operation, rotation of the **crank** wheels 47, 48 by the **motor** 37 **drives** the **connecting rods** 49, 50 to effect a longitudinal/ **vertical movement** to the upper **frame** 27 and thereby the body portion 14 on which the rider **sits** . As described above, the intended rotary path of this reciprocating movement may be varied as desired, whilst in this embodiment it is **adjusted** to **simulate** as closely as possible the natural smooth cantering movement of a polo pony.

Figure 8 illustrates part of a modified embodiment of workout **horse** which is identical to the workout **horse** of Figures 1 to 7 except that it has a head portion 70 which is **pivotally** connected to the neck portion 71. The head portion 70 may be arranged to **pivot** about a vertical **axis** or a horizontal **axis** . However, in this modified embodiment, the head portion 70 is able to **pivot** about both a vertical **axis** and a horizontal **axis** by means of the compound joint 72. **Pivoting** action of the head portion relative to the neck portion is controlled by the rider through the reins 73 which are attached by a single bit ring 74. **Pivotal** movement of the head portion 70 beyond a predetermined limit operates a pressure switch connected...

...tend to pull up which is obviously undesirable. The indicator light thus acts as a **device** for **teaching** the rider on the workout **horse** not to pull on the reins to an excessive amount when hitting a ball.

The size of the body portion 14 and the speed control means for the electric **motor** 34 may be readily adapted to suit a polo player of any ability or age.

Although the workout **horse** has been described as **simulating** the natural smooth cantering movement of a polo pony, it is also envisaged that the longitudinal/vertical action of the **drive** means may be altered so that the body portion **simulates** a different type of **horse** movement.

The workout **horse** may also be used without the **practice** surface area 10, if desired. ...

...CLAIMS A1

1. A workout **horse** comprising a stationary base **frame** (15), a body portion (14) on which a rider **sits** mounted on an upper support (27) which is movable relative to the base **frame** , and **drive** means interconnecting the base **frame** and the upper support for continuously reciprocating the upper support and thereby the body portion forwards and backwards relative to the base **frame** along an intended rotary path, characterised in that for providing the body portion with the **simulated** movement of a **horse** at one end of the upper movable support a rigid link (40) is **pivotally** connected between the upper support (27) and the base **frame** (15), the other end of the upper support being supported above the base **frame** by a separate linkage (43, 44) spaced from the rigid link in the direction of movement of the upper support, and the **drive** means is mounted offset from the linkage in said direction of movement and comprises two **cranks** **driven** by an electric **motor** (37), the first **crank** (49) being connected directly to the upper support to effect said reciprocal motion of the upper support, and the second **crank** (50) being **connected** to said **linkage** between the upper support and the base **frame** whereby substantially horizontal **driving** movement of the second **crank** effects vertical extension or contraction of the linkage (43, 44) thereby changing the attitude of the upper support (27) relative to the base **frame** (15), the combined action of the first and second **cranks** effecting a movement of the upper support and thereby the body portion which **simulates** the movement of a **horse** .
2. A workout **horse** as claimed in Claim 1, characterised in that said linkage comprises a pair of links (43, 44) **pivotally** attached to the upper support (27) and the base **frame** (15) respectively and **pivotally** connected together about a transverse **axis** (46) disposed between the upper support and the base **frame** , and on which **axis** said pair of links are **pivotally** attached to the second **crank** (50).
3. A workout **horse** as claimed in Claim 1 or Claim 2, characterised in that the two **cranks** comprise **crank** wheels (47, 48) mounted on a common output shaft (46) of the electric **motor** (37), the first **crank** wheel (47) having a **connecting** **rod** (49) **pivotally** **connected** at its free end to the upper support (27), and the second **crank** wheel (48) having a **connecting** **rod** (50) **pivotally** **connected** to the extensible link (43, 44) between the upper support (27) and the base **frame** (15).
4. A workout **horse** as claimed in Claim 3, characterised in that the relative rotary position of the two **crank** wheels (47, 48) on the common shaft (46) is infinitely **adjustable** .
5. A workout **horse** as claimed in any one of the preceding claims,

characterised in that the **drive** means (37, 47 to 50) is mounted on the base **frame** (15) between said link (40) and said linkage (43, 44).

6. A workout **horse** as claimed in any one of the preceding claims, characterised in that the **horse** is for use by polo players and the **drive** means effects a movement of the upper support (27) and thereby the body portion (14) which **simulates** the natural cantering movement of a polo pony.
7. A workout **horse** as claimed in any one of the preceding claims, characterised in that the body portion...

...on a support column (24) extending upwardly from the upper support (27).

8. A workout **horse** as claimed in any one of the preceding claims, characterised in that the body portion (14) has a main portion on which the rider **sits** , a neck portion (71) integral with the main portion and a head portion (70) **pivotally** mounted on the end of the neck portion, reins (33) for **pivoting** the head portion, and indicator means (75) which indicate to the rider when the head portion is **pivoted** beyond a predetermined limit.
9. A workout **horse** as claimed in any one of the preceding claims, characterised in that the **horse** is provided in combination with a dish shaped surface (10) on which the **horse** (13) is fixed to enable the rider to **practice** hitting an object over the surface, the contour of the surface being designed to retain the objects within the confines of the surface and to return the objects towards the **horse** .

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ACTIVE BALANCE APPARATUS
APPAREIL ACTIF DE MISE EN VALEUR DE L'EQUILIBRE
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ACTIVE BALANCE APPARATUS
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Detailed Description
Claims

English Abstract

An active balance **device** (10) comprises a **saddle** (16) which is moved by a single **motor** (24) in pitch, yaw and roll. A pair of rotatable shafts (34, 38) are disposed at an angle to the vertical and are coupled to offset **bearing** mountings (50, 54), as a result of which, during rotation of the shafts (34, 38) pitch and yawing motions are imparted to the **seat** . Roll is produced by a bent rod (62) in one of the **bearing** mountings (50). ...

Detailed Description
ACTIVE BALANCE **APPARATUS**
The present invention relates to active balance **apparatus** able to mimic the movement of a **horse** 's back while it walks.

It is known that **horse** riding has beneficial therapeutic effects, particularly to help recovery from some physical injuries and for assistance for some disabilities including Cerebral Palsy, spinal injuries and the like. Riding a **horse** produces pelvic movements in the rider which **imitate** those produced during walking, which can tone back muscles and other important body muscle groups, and which promote the ability to balance.

However, it is not always possible to provide **horse** riding either because it may not be **practical** or readily available or because the person's physical condition may be too poor to be able to cope with a moving **horse** . Moreover, different **horses** move in different ways, thereby not necessarily providing the same effects.
Many attempts have been made to reproduce the movement of a

horse /s back **mechanically** , by what are known as **mechanical** or **rocking** **horses** . However, it is difficult to reproduce accurately the same three dimensional movement of a **horse** 's back, as a result of which many **mechanical** **devices** produce a much simplified approximation in Dust one or two planes of movement. Movement...

...balance system.

According to an aspect of the present invention, there is provided active balance **apparatus** comprising a **seat** coupled to a **driving** platform, the **driving** platform including a moving mechanism comprising one or two motors operable to move the **seat** in three planes of movement.

The preferred three planes of movement are pitch, yaw and...

...means for providing pitch, yaw and roll movements, said means being coupled to a common **driving** **motor** .
In an alternative embodiment, the moving mechanism comprises pitch means, yaw means and roll means...

...providing pitch, yaw and roll movements, two of said means being coupled to a common **driving** **motor** , the third means being coupled to a separate **driving** **motor** .

In one embodiment, the pitch means and yaw means are coupled to the common **motor** , with the roll means being driven independently. In an alternative embodiment, the pitch means and roll means are coupled to the common **motor** , with the yaw means being **driven** independently.

Advantageously, the moving mechanism includes first and second **drive** shafts and a common **motor** coupled to both shafts, each shaft being provided with coupling means to couple the shafts movably to the **seat** , wherein pitch and yaw movements of the **seat** can be produced by actuation of the shafts.

In the preferred embodiment, each coupling means includes a coupling **bearing** coupling the shaft to the **seat** , the **bearing** being axially offset relative to its associated shaft.

The offset nature of the **bearings** provides an off-centre movement of the **seat** relative to each shaft and as a result a yawing motion of the **seat** .

Advantageously, t-he first and second shafts are disposed at an angle to one another, preferably an acute angle. This feature, when coupled to the offset nature of the **bearings** provides the pitching movement of the **seat** .

The first and second shafts are preferably drivably coupled to one another by means of a flexible **drive** belt. In order to **drive** the shafts when they are at an angle to one another, there may be...

...redirecting

means, which may simply be a rod or the like over which the belt **slides** , ensures proper positioning and operation of the belt and also allows for **adjustment** to the positions of the shafts relative to one another and thereby **adjustment** of the nature and amount of movement.

In the preferred embodiment, one of the two **bearings** is coupled to the **seat** through a bent shaft. As the **bearing** rotates, so does the bent shaft. The angle of bend imparts a rolling motion to the **seat** and therefore movement in the third plane.

The **seat** is preferably attached to the moving mechanism through resilient couplings. This provides a certain amount of play in the assembly and enables the **seat** to be moved, for example **rocked** , slightly by hand, thereby giving a natural@feel to the **device** . Moreover, the resilient couplings causes the various types of movement to combine with one another...

...direction of movement.

According to another aspect of the present invention, there is provided a **horse** **simulator** comprising a movable **seat** and means for generating yaw movements in the **seat** including first and second shafts each coupled to the **seat** by an offset **bearing** . Preferably, the first and second shafts are coupled to one another by a flexible **drive** belt.

Advantageously, the first and second shafts are disposed at an angle to one another, thereby to provide pitching movements of the **seat** .

According to another aspect of the present invention, there is provided a **horse** **simulator** comprising a movable **seat** and means for generating roll movements in the **seat** including a shaft coupled to the **seat** by an offset **bearing** , the offset **bearing** including a non-linear coupling member between the **bearing** and the **seat** . The non-linear member produces a rolling motion on rotation of the 9haft.

An embodiment preferred embodiment of
active balance **apparatus** ;
Figures 2a to 2c are different **elevational** views of an example of cowling for the **apparatus** of Figure 1;
is
Figure 3 is a schematic diagram of a first part of an embodiment of **saddle** movement mechanism;
Figure 4 is a more detailed view of the mechanism of Figure 3;
Figure 5 is a view of **bearing** couplings of the mechanism of Figures 3 and 4;
Figures 6 and 7 are detailed views of respective **bearing** couplings of Figure 5;
Figures 8a and 8b show alternative embodiments of roll generating mechanisms; and
Figure 9 shows various details of a decorative head mounting for the **apparatus** of Figure 1.

Referring to Ficrure 1, the embodiment of active balance

apparatus 10 shown includes a base 12 provided with four support legs 14 and covered by a cowling. Movably supported on the base 12 is a **seat** assembly 16 which in this embodiment is in the shape of a **horse** **saddle** . Coupled to the **saddle** 16 is a decorative head portion 18 described in further detail below in connection with Figure 8.

Within the base 12 and the **saddle** assembly 16 there are provided various **mechanical** and electrical mechanisms for moving the **saddle** 16 in a manner which **imitates** the movement of a **saddle** on a **horse** 's back during riding. For this purpose, the **saddle** 16 is moved in pitch, yaw and roll, as is described in detail below.

Various **elevational** views of the cowling of base 12 are shown in Figures 2a to 2c, which...

...not be described in detail save to say that it is intended to cover the **mechanical** and electrical components of the moving mechanism described below and that it is designed to prevent accidental injury during use of the **apparatus** .

Figures 3 and 5 show in schematic form a first part of the moving mechanism...

...to the legs 14 is a support member 22 on which is mounted an electric **motor** 24 which in the preferred embodiment is the only **motor** in the **apparatus** .

The output of the of the **motor** 24 is coupled through a **bearing** assembly 26 forming part of a rack and pinion mechanism 28, in which the rack 30 is reciprocably movable on **driving** of the **motor** . The pinion 32 is provided at the lower end of a first **driving** shaft 34.

The first **driving** shaft 34 is disposed at a predetermined angle to the vertical and is rotatably supported...

...position by suitable support struts connected to the support member 22, of which only a **bearing** coupling 36 is shown in the drawings. Located at the upper end of the first **drive** shaft 34 is a **bearing** coupling which is secured to the inner wall of the **saddle** 16 as is described below.

A second shaft 38 is also disposed at an angle to the vertical and points away from the first **drive** shaft 34.

This second shaft 38 is also rotatably supported in this position by suitable support struts connected to the support member 22, of which only a **bearing** coupling 40 is shown in the drawings. The upper end of the second **drive** shaft 38 is also provided with a **bearing** coupling which is secured to the inner wall of the **saddle** 16 as is described below.

The second shaft 38 is **driven** by the first **drive** shaft 34 through a flexible belt 42 coupling the two. In order to take into...

...bending member 44 avoids significant complexity and cost which would be involved with a **gear** mechanism.

It will be apparent from Figure 5 in particular that the rack 30 will reciprocate in the directions of the arrow on actuation of the **motor** 24. This will cause the first **drive** shaft 34 to rotate in both axial directions. In order to control the amount of...

...first shaft 34 and, as will become apparent from the ensuing description, movement of the **saddle** 16, the pinion 32 is chosen so as to provide, in this example, around 3000...

...The belt 42 is toothed and is coupled to the shafts 34, 38 by toothed **gears** 46 arranged such that the second shaft 38 rotates a total of over 360...

...shaft 34.

Referring to Figures 4 and 5, at the upper end of the first **drive** shaft 34 there is provided a first **bearing** mount 50 which includes an offset **bearing** , described below, and a pair of struts 52 **pivotably** coupled at respective sides of the **bearing** mount 50. The lower end of the struts 52 are **pivotably** secured to the inner surface of the **saddle** 16, preferably through a resilient mount such as a rubber mount.

The use of a resilient mount provides a small amount of flexibility in the way of play to the **saddle** assembly 16 to give it a more natural feel.

The upper end of the second shaft 38 is also provided with a **bearing** mount 54, described in detail below, which is connected to a **sliding** **bearing** 56 having a shaft 58 secured to the inner surface of the **saddle** 16. The shaft 16 is also secured by means of resilient mounts 60.
The first **bearing** mount 50 is shown in more detail in Figure 6, which is a mirror image relative to Figures 4 and 5. The **shaft** @ 34 is **connected** by means of a spacer 60 to a rod 62 which is thus offset relative to the **axis** of the shaft 34.

The upper end of the rod 62 has a **bearing** to which the strut 52 is coupled. A cup housing 64 is located around the rod 62 and is sufficiently large to allow **rocking** of the strut 52. The lower end of the strut 52 is provided with another **bearing** 66 which connects with the resilient mount.

11 be apparent from Figure 6, the rod 62 is bent at 68
As w.
so as to be in a non-parallel **axis** relative to the **drive** shaft 34.

The second **bearing** mount 54, shown in detail in Figure 7, is also offset relative to the second...

...shown), as will be apparent from Figure 5. The spacer is connected to a lower **bearing** member 70 within which a rod 72 is rotatably disposed. The rod 72 extends along an **axis** substantially parallel to the **axis** of the second shaft 38.

At the upper end of rod 72 there is provided a **bearing** 74 to which is coupled the **sliding** **bearing** assembly 56, 58.

In operation, when the **motor** 24 is activated, the rack 30 will reciprocate causing the shaft 34 to rotate in...

...angle of rotation of, in this example, over 360. As a result of the offset **bearing** mount 50, the rotation imparted to the front of the **saddle** 16 will not be purely rotational. There will be a component of yaw related to...

...the rotation of the shaft 34. The yaw motion produced at the front of the **saddle** 16 is shown to the left of Figure 6 and is part circular.

Forward motion of the **saddle** 16 is basically produced by the front assembly 34-50, with the **sliding** **bearing** 56-58 providing basically a slave behaviour in this regard. The second shaft 38 and associated **bearing** mount 54 produces a yaw motion at the back of the **saddle** 16 as shown to the left of Figure 7. This motion, in combination with that at the front of the **saddle** 16 mimics the motion of a **saddle** on the back of a **horse** .

Roll is produced as a result of the bent rod 62 in the front **bearing** mount 50. As will be apparent from a consideration of Figure 6, as the shaft 34 rotdtes, the **bearing** 50 rotates also, causing the strut 52 to **rock** from one side to the other during each rotation. By virtue of the coupling to the **saddle** 16, roll of the **saddle** is generated. The amount of roll depends on the angle of bend in the rod...

...embodiment, the amount of roll is chosen to be equivalent to that of a typical **horse** .

Thus, by simple **mechanical** components, the **saddle** can be made to pitch, yaw and roll. The integration of the movements into the same **mechanical** components ensures that there is not separate change from one type of movement to...

...combine with yawing and/or roll in the same way as would occur on a **horse** .

The amount of pitch and yaw can be changed by changing, for example the...

...this purpose, they may be mounted to the support member 22 by means of an **adjustable** mount. The flexible belt 42 can readily accommodate such changes in angles of the shafts...

...upper or lower part of the rod 62, respectively, and in which they are **pivotably** or otherwise **adjustably** connected together.

In an alternative embodiment, the front **bearing** mount 50 provided a coupling to the **saddle** which allows for independent roll and the rod 62 is replaced by a straight rod...

...one
of the ones shown in Figures 8a or 8b.

Referring to Figure 8a, the **saddle** 16 is shown in transverse cross-section and the mechanism shown in figures 3...

...Roll is provided by means of a
shaft 92 coupled to one side of the **saddle** 16 and reciprocable into and out of a piston 90 **driven** by a suitable **motor** 94. It will be apparent that the **motor** 94 will be controlled in conjunction with the **motor** 24 so as to provide appropriate roll.

In Figure 8b the piston assembly 90, 92 is replaced by two air bags 100 10/2 either side of the **saddle** 16. A suitable pneumatic hydraulic pump 104 inflates and deflates the bags 100, 102 to generate roll. The pump 104 will be controlled in conjunction with the **motor** 24 so as to provide appropriate roll.

In an alternative embodiment, the second shaft 38 could be **driven** by its own **motor** .
Figure 9 shows an example of ornamental **horse** head 200, which is particularly useful with children. The head 200 is formed from metal...

...pair of ears 206, preferably in leather. The head
200 can be attached to the **saddle** 16 by suitable decorated fasteners 208.

It is envisaged that reins will also be provided for assisting in balancing, and stirrups when appropriate.

In the preferred embodiment, the **seat** 16 has a variable shape in order to accommodate different user needs. For this purpose, the **seat** 16 is provided with pockets (not shown) either side thereof into which one or more pads may be inserted. It is envisaged that in some circumstances the **seat** shape may not be symmetrical.

Additionally or alternatively, the **seat** 16 may be formed in two halves connected by a longitudinal hinge.

Claim
1 Active balance **apparatus** comprising a **seat** coupled to a **driving** platform, the **driving** platform including a moving mechanism comprising one or two motors operable to move the **seat** in three planes of movement.

2 Active balance **apparatus** according to claim 1, wherein the three planes of movement are pitch, yaw and roll.

3 Active balance **apparatus** according to claim 1 or 2, wherein'the moving mechanism comprises pitch means, yaw

means...

...means for providing pitch, yaw and roll movements, said means being coupled to a common **driving** **motor** .

4 Active balance **apparatus** according to claim 1 or 2, wherein the moving mechanism comprises pitch means, yaw means...

...providing pitch, yaw and roll movements, two of said means being coupled to a common **driving** **motor** , the third means being coupled to a separate **driving** **motor** . (

S. Active balance **apparatus** according to claim 4, wherein the pitch means and yaw means are coupled to the common **motor** , with the roll means being **driven** independently.

6 Active balance **apparatus** according to claim 4, wherein the pitch means and roll means are coupled to the common **motor** , with the yaw means being **driven** independently.

. Active balance **apparatus** according to any preceding claim, wherein the moving mechanism includes first and second **drive** shafts and a common **motor** coupled to both shafts, each shaft being provided with coupling means to couple the shafts movably to the **seat** , wherein pitch and yaw movements of the **seat** can be produced by actuation of the shafts.

8 Active balance **apparatus** according to claim 7, wherein each coupling means includes a coupling **bearing** coupling the shaft to the **seat** , the **bearing** being axially offset relative to its associated shaft.

9 Active balance **apparatus** according to claim 8, wherein one of the two **bearings** is coupled to the **seat** through a bent rod.

10 Active balance **apparatus** according to claim 7, 8 or 9, wherein the first and second shafts are disposed at an angle to one another.

11 Active balance **apparatus** according to any one of claims 7 to 10, wherein the first and second shafts are drivably coupled to one another by means of a flexible **drive** belt.

12 Active balance **apparatus** according to claim 11, including belt redirecting means operable to bend the belt.

13 Active balance **apparatus** according to any preceding claim, wherein the **seat** is attached to the moving mechanism through resilient couplings.

14 Active balance **apparatus** substantially as herein described with reference to the accompanying drawings.

15. A **horse** **simulator** comprising a movable **seat** and means for generating yaw movements in the **seat** including first and second shafts each coupled to the **seat** by an offset **bearing** .

16 A **horse** **simulator** according to claim 15, wherein the

first and second shafts are coupled to one another by a flexible **drive** belt.

17 A **horse simulator** according to claim 15 or 16, wherein the first and second shafts are ...disposed at an angle to one another, thereby to provide pitching movements of the **seat** .

18 A **horse simulator** comprising a movable **seat** and means for generating roll movements in the **seat** including a shaft coupled to the **seat** by an offset **bearing** , the offset **bearing** including a non-linear coupling member between the **bearing** and the **seat** .

19 A **horse simulator** substantially as herein described with reference to the accompanying drawings.

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AN ELECTROMECHANICAL DEVICE **FOR THE** SIMULATION **OF** HORSE **RIDING AT ALL TREADS**

DISPOSITIF ELECTROMECANIQUE DE SIMULATION **DE MONTE A CHEVAL A TOUTES LES ALLURES**

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AN ELECTROMECHANICAL DEVICE **FOR THE** SIMULATION **OF** HORSE **RIDING AT ALL TREADS**

DISPOSITIF ELECTROMECANIQUE DE SIMULATION **DE MONTE A CHEVAL A TOUTES LES ALLURES**

Main International Patent Class: **A63B-069/04**
Fulltext Availability:
Detailed Description
Claims

English Abstract

An electromechanical **device** for the **simulation** of **horse** riding, at all treads, having means for performing translation movements comprises: a control and regulation unit (1) for the rotation speed of an electric **motor** (M); a disk system (9, 10) having four disks to which four uprights (13) are connected in out of centre points (12) carrying a **horse** mock-up with a **saddle** ; and a coupling system between the electric **motor** (M) and the disk system (9, 10) comprising a main **axis** (6), a first pulley-belt-system (3-5) between the electric **motor** (M) and the main **axis** (6) and a second pulley-belt-system (7, 8, 11) between the main **axis** (6) and the disk system (9, 10). ...

French Abstract

Dispositif electromagnetique de **simulation** de monte a cheval a toutes les allures dont les moyens de realisation des mouvements...

...M) et le systeme de disques (9, 10), comprenant un arbre principal (6), un premier **train** de courroies et poulies (3-5) entre le moteur electrique (M9) et l'arbre principal (6) et un deuxieme **train** de poulies et courroies (7, 8, 11) entre l'arbre principal (6) et le systeme ...

Detailed Description

AN ELECTROMECHANICAL **DEVICE** FOR THE **SIMULATION** OF **HORSE** RIDING AT ALL TREADS"

The present invention concerns an electromechanical **device** for the **simulation** of **horse** riding at all treads, comprising means for performing translation movements in front and back direction on the sagittal plane, in all similar to those of real **horses** , The present invention takes its origin from the need of having, in a gymnastic school, a **simulator** that allows the beginners to perform all exercises for **learning** **horse** riding, and to advanced ones the **training** for increasing the muscles of the legs (femoral biceps, iliac psoas), the upper and...

...the lumbar area and the long muscles of the back.

A further advantage of the **device** according to the present invention is that it allows the **training** for the general coordination, essential in accompanying the movements of the **horse** . and the eventual exhibition of experts in the most different **horse** acrobatics.

The present invention, as claimed in the claims, solves the problem of creating an electromechanical **device** for the simulation of the riding steps of a **horse** like step, trot and 11.1 ...

gallop, comprising a disk system being out of **axis** from the rotation centre which, by means of four uprights on which as mock-up of a riding **horse** is provided, make perform to said mock-up translation movements in front and back direction...

...to the present invention,
Figure 2, shows an exploded view of the components of the **device** according to the present invention,
Figure 3, shows a variant of the moving **device** of the mock-ip of the riding **horse** .

The figures show an electromechanical **device** for the **simulation** of **horse** riding, at all treads, comprising.

a control and regulation central 1 for the rotation speed of the electric **motor** M;
an electric **motor** M, the **axis** 2 thereof - through pullev 3, the belt 4 and the pulley 5 - puts into rotation the **motor** **axis** 6;
- two pulleys 7 which, together with belts 8, put into rotation disks 9...

...to the four uprights 13, out of one piece with the body C of the **horse** mock-up with a **saddle** S so that following to the rotation of the disks 9 and 10 said uprights **rise** and get down and said body performs translation movements in front and back direction on the sagittal plane,
For what concerns the working of the **device** according to the present invention, the regulation of the control central 1,

Claim
An electromechanical **device** for the **simulation** ofc **horse** riding, at all treads, comprising means for performing translation movements in front and back direction on the sagittal plane, similar to those of real **horses** , characterized in:

- a control and regulation central (1) for the rotation speed of the electric **motor** (M),
- an electric **motor** (M), the **axis** (2) thereof - through pulley (3). belt (4) and the pulley (5) - puts into rotation the **motor** **axis** (6);
-two pulleys (7) which, together with belts (8). put into rotation disks (9) and...

...to the four uprights (13), out of one piece with the body (C) of the **horse** mock-up with a **saddle** (S) so that following to the rotation of the disks (9) and (10) said uprights **rise** and get down and said body performs translation movements in front and back darection on the sagittal plane.

2 An electromechanical **device** according to claim I characterized in that the regulation of the contron central (1), by...

```
Set      Items   Description
S1      339911   HORSE? OR EQUESTR? OR EQUINE? OR HOBBYHORS? OR HIPPO()THER-
              AP? OR HIPPOTHERAP? OR BULL? ?
S2     7988339   SIMULAT? OR IMITAT? OR APPARAT? OR DEVICE? OR MACHIN? OR M-
              ECHANIC?
S3     6903403   TRAIN? OR TEACH? OR TUTOR? OR DRILL? OR LEARN? OR PRACTIC?
              OR PRACTIS? OR EDUCAT? OR REHEARS? OR INSTRUCT?
S4      238711   SADDLE? OR SEAT? OR SIT OR SITS OR SAT OR SITTING
S5      226928   SLIDE? OR SLIDING OR GLIDE? OR GLIDING?
S6     2219605   ELEVAT? OR LIFT? OR RAIS? OR LEVITAT? OR RISE? OR RISING OR
               (MOVE? OR MOVING)(2N)(VERTICAL? OR UPWARD?)
S7     4733881   COMPUTER? OR CONTROLLER?
S8      708402   BUFFER? OR SHOCK()ABSORB? OR SPRING? OR CUSHION?
S9     1336498   LOAD?
S10    1504594   ADJUST? OR FINETUN? OR FINE()(TUNE? OR TUNING?) OR CALIBRA-
              T? OR TUNE? OR TUNING? OR ATTUNE? OR ATTUNING OR ALIGN? OR AL-
              INE?
S11    2014318   DRIVE? OR DRIVING OR GEAR? OR MOTOR?
S12    1469035   SENSOR? OR TRANSDUCER? OR DETECTOR? OR DETECTER? OR SENSIN-
              G()(ELEMENT? OR DEVICE?)
S13     156470   WORM? OR SCREW??? OR CONNECT?(2N)(ROD OR RODS OR LINK? OR -
              ARM OR ARMS OR SHAFT? OR ASSEMBL?)
S14    2560471   AXIS? OR AXES? OR FRAME? OR BEARING? OR LEVER? OR PIVOT? OR
               CRANK? OR ROCK??? OR SPEED(2N)REDUC? OR DECELERAT?
S15       3436   S1 AND S2 AND S3
S16        203   S15 AND S1(10N)S2 AND S1(10N)S3
S17         49   S16 AND (S4 OR S7 OR S12)
S18         97   S16 AND S4:S14
S19         97   S17:S18
S20         95   S19 AND PY<2004
S21         83   RD (unique items)
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        (c) 1998 Inst for Sci Info
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        (c) 2001 THE NEW YORK TIMES
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        (c) 2004 The New York Times
File 475:Wall Street Journal Abs 1973-2004/Jul 16
        (c) 2004 The New York Times
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        (c) 2004 ACFCI & Chambre CommInd Paris
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
        (c) 2002 The Gale Group
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21/3,K/57 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus
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05566376 JICST ACCESSION NUMBER: 03A0568696 FILE SEGMENT: JICST-E
Usefulness of horse **-riding** simulator **on the balance-function of old people.**

ISHIDA KENJI (1); KIMURA TETSUHIKO (2); O SEKIGYOKU (3); SHINOMIYA YOICHI (4)
(1) Kochi Medical School, JPN; (2) Nippon Med. Sch.; (3) Kouchi Univ. Technol., Faculty of Engineering, JPN; (4)Matsushita Electric Works, Ltd., JPN

Kosei Rodosho Seishin, Shinkei Shikkan Kenkyu Itakuhi ni yoru Kenkyu Hokokushu Heisei 14 Nendo(2nendohan, Shonendohan) (Annual Report of the Research on Nervous and Mental Disorders 2002), **2003** , PAGE.134-135, REF.4
JOURNAL NUMBER: N20031207S
UNIVERSAL DECIMAL CLASSIFICATION: 616-082 614
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

Usefulness of horse **-riding** simulator **on the balance-function of old people.**
, 2003

ABSTRACT: **Horse** -riding therapy is done in infant example with the failure in body and spirit and chronic lumbago example, and it has **raised** the effect. In Europe, it is used as one of physiotherapies. In this study, usefulness of both equipment of 6 shaft **horse** -riding robot and home **trainer** "Jouba" was investigated. As the result, it was shown that this equipment was useful as a reinforcement **training** of muscle, and it is considered that this equipment can become sufficiently useful equipment for...

...DESCRIPTORS: **simulation** ;

21/3,K/58 **(Item 2 from file: 94)**
DIALOG(R)File 94:JICST-EPlus
(c)2004 Japan Science and Tech Corp(JST). All rts. reserv.

05509177 JICST ACCESSION NUMBER: 03A0590131 FILE SEGMENT: JICST-E
Verification of Physical Training **Effects on** Horse **Riding** Simulation **Equipment "JOBA DIET-EXA"**
MIHARA IZUMI (1); SANEMATSU WATARU (1); HIRUI AKIKO (1); OZAWA TAKAHISA (2); YUKAWA TAKASHI (2); HOJO HIROYUKI (3)
(1) Matsushita Electric Works, Ltd., JPN; (2) Matsushita Electric Works, Ltd., JPN; (3) Matsushita Electric Works, Ltd., JPN
Matsushita Denko Giho(MEW Technical Report), **2003** , NO.82, PAGE.44-51, FIG.10, TBL.1, REF.9
JOURNAL NUMBER: S0151AAP ISSN NO: 0285-5054
UNIVERSAL DECIMAL CLASSIFICATION: 613/614
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

Verification of Physical Training **Effects on** Horse **Riding** Simulation **Equipment "JOBA DIET-EXA"**
, **2003**

ABSTRACT: JOBA DIET-EXA" has been developed by increasing the operating speed of "JOBA", an exercise **training** **machine** providing a simplified **horse** riding motion, for applying the physical effect to the middle-age group. Electromyography indicates that...

...is smaller than the burden of elderly persons through the evaluation of Heart Rate. A **training** program designed for middle-aged women, 20 minutes a day, 3 times a week for...

...for maintaining posture and walking as well as increase the rest-state metabolism. In addition, **practicing** aerobics exercise, "Jobabics", when riding the "JOBA DIET-EXA" proves to decrease waist and hip...
DESCRIPTORS: athletic **training** ; ...

... **machinery** ;
IDENTIFIERS: **training** **machine**
BROADER DESCRIPTORS: **education** and **training** ; ...

... **load** ;

21/3,K/59   (Item 3 from file: 94)
DIALOG(R)File 94:JICST-EPlus
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04821550   JICST ACCESSION NUMBER: 01A0238373 FILE SEGMENT: JICST-E

A study on the effect of Karakuri Horse **therapy.**

HASHIMOTO KOJI (1); AOKI TAKAAKI (2); KIJIMA RYUGO (3); OJIKA TAKEO (3)
(1) Gifudai Daigakuinkogakukenkyuka; (2) Gifu Univ., Hosp.; (3) Gifu Univ., Fac. of Eng.

Nippon Bacharu Riariti Gakkai Taikai Ronbunshu(Proceedings of the Virtual Reality Society of Japan Annual Conference), **2000** , VOL.5th, PAGE.483-486, FIG.7, REF.8
JOURNAL NUMBER: L3000AAU   ISSN NO: 1342-4564
UNIVERSAL DECIMAL CLASSIFICATION: 681.3:621.397.3   616-082
LANGUAGE: Japanese   / COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Conference Proceeding
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

A study on the effect of Karakuri Horse **therapy.**
, **2000**

ABSTRACT: **Horse** riding therapy is popular as the rehabilitation for the disabled in Europe and America. However, the research based on objective data for treated effect and effectiveness about the **horse** riding therapy is comparatively little of the spread. The reason why it quantitatively knows the causal relation between a physical influence from the **horse** to the body and the effect of treatment is to be difficult. So, we are developing a **horse** riding **simulator** that can be used for **horse** riding therapy. We introduce the effect of **horse** therapy using **horse** riding **simulator** . The result prove that it is effective muscle **training** and progress of balance. In future, we will make effective **training** program at symptom. (author abst.)

...DESCRIPTORS: **training** **simulator** ; ...

...athletic **training** ;
BROADER DESCRIPTORS: **computer** graphics...

... **computer** application...

... **simulator** ; ...

... **education** and **training** ;

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Set      Items   Description
S1      491912   HORSE? OR EQUESTR? OR EQUINE? OR HOBBYHORS? OR HIPPO()THER-
              AP? OR HIPPOTHERAP? OR BULL? ?
S2     1694272   SIMULAT? OR IMITAT? OR APPARAT? OR DEVICE? OR MACHIN? OR M-
              ECHANIC?
S3     5711981   TRAIN? OR TEACH? OR TUTOR? OR DRILL? OR LEARN? OR PRACTIC?
              OR PRACTIS? OR EDUCAT? OR REHEARS? OR INSTRUCT?
S4     1671399   SADDLE? OR SEAT? OR SIT OR SITS OR SAT OR SITTING
S5      235823   SLIDE? OR SLIDING OR GLIDE? OR GLIDING?
S6     4339317   ELEVAT? OR LIFT? OR RAIS? OR LEVITAT? OR RISE? OR RISING OR
               (MOVE? OR MOVING)(2N)(VERTICAL? OR UPWARD?)
S7     1753438   COMPUTER? OR CONTROLLER?
S8      704258   BUFFER? OR SHOCK()ABSORB? OR SPRING? OR CUSHION?
S9      356749   LOAD?
S10     926943   ADJUST? OR FINETUN? OR FINE()(TUNE? OR TUNING?) OR CALIBRA-
              T? OR TUNE? OR TUNING? OR ATTUNE? OR ATTUNING OR ALIGN? OR AL-
              INE?
S11    3249242   DRIVE? OR DRIVING OR GEAR? OR MOTOR?
S12      91095   SENSOR? OR TRANSDUCER? OR DETECTOR? OR DETECTER? OR SENSIN-
              G()(ELEMENT? OR DEVICE?)
S13      90316   WORM? OR SCREW??? OR CONNECT?(2N)(ROD OR RODS OR LINK? OR -
              ARM OR ARMS OR SHAFT? OR ASSEMBL?)
S14    1849926   AXIS? OR AXES? OR FRAME? OR BEARING? OR LEVER? OR PIVOT? OR
               CRANK? OR ROCK??? OR SPEED(2N)REDUC? OR DECELERAT?
S15        472   S1(10N)S2 AND S1(10N)S3
S16        145   S15 AND (S4 OR S7 OR S12)
S17        145   S16 AND S4:S14
S18        145   S16:S17
S19         55   S18 AND S7
S20         93   S18 AND S2(5N)S1
S21        109   S19:S20
S22        101   S21 AND PY<2004
S23         99   RD (unique items)
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S1      955224   HORSE? OR EQUESTR? OR EQUINE? OR HOBBYHORS? OR HIPPO()THER-
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                ECHANIC?
S3    12268262   TRAIN? OR TEACH? OR TUTOR? OR DRILL? OR LEARN? OR PRACTIC?
                OR PRACTIS? OR EDUCAT? OR REHEARS? OR INSTRUCT?
S4     3292534   SADDLE? OR SEAT? OR SIT OR SITS OR SAT OR SITTING
S5      728569   SLIDE? OR SLIDING OR GLIDE? OR GLIDING?
S6     8195820   ELEVAT? OR LIFT? OR RAIS? OR LEVITAT? OR RISE? OR RISING OR
                 (MOVE? OR MOVING)(2N)(VERTICAL? OR UPWARD?)
S7    10351305   COMPUTER? OR CONTROLLER?
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S9     1584789   LOAD?
S10    3492087   ADJUST? OR FINETUN? OR FINE()(TUNE? OR TUNING?) OR CALIBRA-
                T? OR TUNE? OR TUNING? OR ATTUNE? OR ATTUNING OR ALIGN? OR AL-
                INE?
S11    8400167   DRIVE? OR DRIVING OR GEAR? OR MOTOR?
S12     657344   SENSOR? OR TRANSDUCER? OR DETECTOR? OR DETECTER? OR SENSIN-
                G()(ELEMENT? OR DEVICE?)
S13     327593   WORM? OR SCREW??? OR CONNECT?(2N)(ROD OR RODS OR LINK? OR -
                ARM OR ARMS OR SHAFT? OR ASSEMBL?)
S14    5681392   AXIS? OR AXES? OR FRAME? OR BEARING? OR LEVER? OR PIVOT? OR
                 CRANK? OR ROCK??? OR SPEED(2N)REDUC? OR DECELERAT?
S15       1588   S1(10N)S2 AND S1(10N)S3
S16       1072   S15 AND S1(5N)S2
S17        290   S16 AND S4
S18        483   S16 AND (S7 OR S12)
S19        103   S17 AND S18
S20        103   S19 AND S4:S14
S21        103   S19:S20
S22        100   S21 AND PY<2004
S23         62   RD (unique items)
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23/3,K/39
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21287444 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Saddle **up - and let's get rolling**
WESTERN MORNING NEWS
February 15, 2002
JOURNAL CODE: FWMN LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 877

(USE FORMAT 7 OR 9 FOR FULLTEXT)
Saddle **up - and let's get rolling**

... of quarter horses but, stabled together by the round pen, are Geronimo and Cochise, two **equine simulators** who have been specially adapted to Western style. They can walk, jog, and lope and...

...canter and gallop to non-cowboys
"I can teach someone in one lesson to do **rising** trot as long as they have desire, rhythm and flexibility," says Sheila as she climbs...

... to try Western riding visit Oxenways in East Devon for a weekend with a difference **EDUCATION** :At Oxenways you can **learn** the Western way on **equine horse simulators** FULFILMENT:Live your cowboy dreams on well-**trained** quarter **horses**

20020215

23/3,K/67
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08760496 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Galloping to health: Mechanical horse **to help the disabled**
SEAN KIRBY
NOTTINGHAM EVENING POST , Nottingham Post Group - Evening Post (North - NT) ed, p14
December 13, 1999
JOURNAL CODE: FNEP LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 323

(USE FORMAT 7 OR 9 FOR FULLTEXT)
Galloping to health: Mechanical horse **to help the disabled**

... learning difficulties in north Notts are riding the path to better health - thanks to a **mechanical horse** .

Adults with physical and **learning** difficulties at the White Water Day Centre, in Ollerton, are the first in the county to **saddle** up for the unusual therapy.

BABS, or the Babbage Active Balance **Saddle** , is modelled on a rodeo bucking bronco machine - but can be finely controlled so as...

... Centre manager Ray Berry said people who could not get on a real horse could **saddle** up the robot one.

The centre had already had requests to use it from other...

...will be gradual, added Ms Perry.

Funding for the Pounds 3,500 robo-horse was **raised** by parents and carers of the White Water Centre, which has 116 people on its...

19991213

23/3,K/68

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08760310 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Galloping to better health

NOTTINGHAM EVENING POST , Nottingham Post Group - Evening Post (Late Final - LF) ed, p14
December 13, 1999
JOURNAL CODE: FNEP LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 250

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... learning difficulties in north Notts are riding the path to better health - thanks to a **mechanical horse** .

Adults with physical and **learning** difficulties at the White Water day centre, in Ollerton, are the first in the county to **saddle** up for the unusual therapy.

BABS, or the Babbage Active Balance **Saddle** , is modelled on a rodeo bucking bronco machine - but it is finely controlled so as...

... Centre manager Ray Berry said people who could not get on a real horse could **saddle** -up the robot one, adding: BABS is very controllable and can give someone all the...

...will be gradual, added Ms Perry.

Funding for the Pounds 3,500 robo-horse was **raised** by parents and carers of the White Water Centre, which has 116 people on its...

19991213